THE AMERICAN
JOURNAL OF PHARMACY.

JULY, 1883.

MEMOIR OF DANIEL B. SMITH.

Read at a Meeting of the Philadelphia College of Pharmacy, June 25, 1883.

In the endeavor to comply with the request of the Board of Trustees of this College, to furnish a memoir of the life of one who was connected with this Institution from its inception, I am aware of the difficulty of calling into review the events of a life extending over nearly a century.

In a life marked by more than usual activity in the interest taken in the progress of scientific and social development, and yet unostentatious and quiet, we are reminded of a living stream flowing quietly along its course, germinating and nourishing growths of utility and beneficence, until it is lost in the gathering together of the waters.

The ancestors of Daniel B. Smith were intimately associated with the early settlement of Burlington County, N. J. Daniel B. Smith, the son of Benjamin and Deborah Morris Smith, was born in the City of Philadelphia, Seventh month, 14th, 1792.

His father died when he was about one year old, and his mother removed to Burlington, N. J., her native place, where there was a large circle of intelligent relatives and friends. Passing through the periods of childhood and youth in the cultivated society which was a noted feature of "the quiet, respectable and ancient City of Burlington," there was developed and cultivated in his mind those literary and scientific tastes which gave a direction and aim to his after life.

His early education was at the school of John Griscom, who in 1794, decided after much deliberation to take the school which was under the charge of the Monthly Meeting of Friends.

The school which opened with three scholars, in three months increased to thirty-five, and soon attracted the attention of parents in Philadelphia, New York, and some parts of New England, whose children were sent to the school and were received as boarders in private families in the town.

In the fall of 1808, John Griscom commenced a series of public lectures on Chemistry, given in his school-room in Burlington, and taught chemistry to his more advanced pupils, which was probably the first teaching of chemistry in the common schools in this part of the United States.[1]

Under the instruction of a teacher who was gifted with a remarkable conversational ability, who had a love for, and an aptitude in the acquirement of scientific knowledge, who possessed considerable manipulatory dexterity as an experimenter, and who withal had a fondness for children, it is not unlikely that the instruction here received determined the course of his after life, in making choice of a business which would bring him in close relationship to scientific pursuits.

After leaving school, Daniel B. Smith entered the store of John Biddle, 142 (old number) Market between Fourth and Fifth streets, to learn the drug business. At the completion of his term of apprenticeship he was taken into partnership under the firm name of Biddle & Smith; this partnership continued for about one year. In 1819, Daniel B. Smith withdrew from the partnership and opened store on his individual account at the northeast corner of Arch and Sixth streets.

At that time, and for many years afterwards, this locality was the quiet and somewhat secluded quarters of the members of the Society of Friends, citizens active in the business affairs of life, but in their retirement enjoying the comfortable mansions and airy yards of Arch street. A once venerable dweller of the northwest corner of Arch and Sixth streets, often remarked to me as the wheels of commerce invaded the quiet of this corner: "Why for years after Mr. Smith established his store, we could take our chairs out into the street, and sit under the shade of the trees all of the morning without being disturbed by a passing vehicle."

We regret that no diary or autobiography has been left to mark the progress of his business at Arch and Sixth streets, and to outline the growth of the habits and tastes which were prominent features of his after life.

As an index of his turn of mind as a young man, we find him interested in the means of extending information and self-culture to boys

[1] Memorial of John Griscom, by his son.

who were learning trades. The result of this was the founding of the Apprentices' Library, in 1820.

We quote from the Fiftieth Annual Report of the Managers of the Apprentices' Library, the historical portion of which is the compilation of our venerable member, Samuel F. Troth, than whom no one living is better acquainted with the precedents of the Apprentices' Library:

"It is now half a century since three worthy and benevolent citizens of Philadelphia—Thomas Kimber, Daniel B. Smith and Samuel L. Shober—met in the parlor of one of their number, on Arch street, when a conversation took place between them in relation to the wants of apprentice boys, and the great need there was in our city of a library to supply them, free of charge, with good, interesting and useful books.

"Those of our old and worthy citizens still living who were boys in 1820, when books were exceedingly scarce compared to the present period, can fully appreciate this praiseworthy idea and noble undertaking.

"A public meeting was called, and held Second month (February), 1820, when this company was organized by the election of a President, Vice-President, Secretary, Treasurer and twenty-four Managers. Of this first appointment of twenty-eight officers only three are now living (1870)—Horace Binney, Daniel B. Smith and Lloyd Mifflin—the first named being the first President.

"When we look back over this period of fifty years, and see from our registers that 58,144 persons have been the recipients of the benefits of our useful institution, many of whom have become really noted and valuable citizens, this alone is a cause for rejoicing at the success of our association; but when we remember that in many cases the volumes obtained from our shelves have been read by several members of each family into which they have been taken, there is no calculating, and no one will ever know, the great influence for good that our institution has had over this extended community."

One of the most important events at this period was the active part which he took in the measures which eventuated in the establishment of this College. The immediate cause of the attention of the apothecaries of this city being directed to the subject was a resolution of the Trustees of the University of Pennsylvania, passed February 6, 1821, proposing to confer the degree of Master in Pharmacy "on such persons as were exercising or intended to exercise the profession of apothecary, as are and shall be duly qualified to receive the same." It was further proposed to establish an examination for the degree of M. P. for those who had served an apprenticeship of three years in learning the business, after which an attendance upon two courses of lectures would be required in order to obtain that degree. An account of the

proceedings of the druggists and apothecaries of this city which this proposition on the part of the Trustees of the University gave occasion to are summarized by Edward Parrish in an "Historical Memoir," read at the opening of this building, October 7, 1868. The result was the adoption of and signing of a constitution on the 3d of March, 1821, of a College especially intended for the instruction of Druggists. The first meeting of "The College of Apothecaries" was held March 27, 1821, at which officers were elected, Daniel B. Smith being chosen Secretary.

On the 30th of March, 1822, the institution was incorporated as the Philadelphia College of Pharmacy.

At a meeting held June 28, 1825, a Committee on Publication was appointed, D. B. Smith, Chairman. This committee reported March 28, 1826, the issue of the first number of the "American Journal of Pharmacy." Two hundred and fifty copies were issued and eighty subscribers obtained. D. B. Smith was a liberal contributor of original articles to the early volumes of this journal, and furnished many valuable selections from foreign periodicals. His original article on "Epsom Salts and Magnesia" opened the first number in December, 1825. "A Review of Chemical Manipulations, by Campbell Morfit," in the twenty-ninth volume, 1857, closed his contributions to this Journal. After service as Secretary for seven years, he was elected Vice-President in 1828, and President in 1829. For a period of twenty-five years he held this position, resigning in 1854. During this period of a quarter of a century the College encountered the difficulties which are not uncommon to growing institutions—financial difficulties and a want of cordial support from the profession in this city. A comprehensive and intelligent view of the field awaiting cultivation in the department of pharmacy was never lost sight of by the President and his associates. The awakening to a realization of the benefits to be derived from systematic instruction came at last, and our venerable ex-President lived to see the list of graduates increase from three in 1826 to fifty-one in 1868, and one hundred and fifty-three in 1883.

After retiring from active participation in the councils of the College, his interest in its welfare remained as a prominent feature of his after life.

The publication of the Pharmacopœia of 1830 was followed in 1833 by the United States Dispensatory, by Drs. Wood and Bache.

It was the understanding of the compilers of this work that D. B. Smith should be associated with them in its preparation. He contributed several articles to the first edition, but his removal to Haverford in 1834 removed him from the sphere in which his labor in that direction could be made available.

"In a volume of introductory lectures and addresses on medical subjects," by the late Dr. Geo. B. Wood (1860), the following tribute is paid to Daniel B. Smith:

"Justice requires that some allusion should here be made to the services of a gentleman to whom the pharmacy of this country is greatly indebted. I refer to Daniel B. Smith, formerly President of the Philadelphia College of Pharmacy.

"Standing among the first apothecaries of his time in literary and scientific attainment, peculiar skill in his art, and general reputation, he entered zealously into the movement which originated and sustained the College of Pharmacy, and by his own written contributions, the encouragement which he extended to the efforts of younger men, and the measures set on foot, or ardently supported by him for the improvement in various ways of the profession to which he was attached, he contributed, I think, more than any other one individual to the impetus which has carried the pharmacy of this country to its present relatively high position.

"Should this notice reach him in his retirement, the author hopes that he will receive it kindly, and as the testimony of one who has known him for more than forty years, has always esteemed him highly, and entertained a grateful sense of the early aid and encouragemet extended by him to his own professional labors."

In 1824, he married Esther Morton, daughter of John Morton, a merchant of this city, and President of the Bank of North America from 1809 to 1822.

In the fall of 1828, William Hodgson, Jr., was associated with him in business at the northeast corner of Arch and Sixth streets. On his first settling in Philadelphia (1827), William Hodgson, Jr., had opened a store at No. 270 (old number) Arch street, below Tenth street, on the south side.

William Hodgson, Jr., was one of the most accomplished druggists of his time,—he had received a generous education in England,—was brought up in his profession in one of the most celebrated establishments in London, and was remarkable for accuracy, neatness, and despatch in all his work. He was a good chemist and a successful manipulator.

Relieved from the details of business by his association with so competent a partner, D. B. Smith turned to the pursuits which were in

unison with the natural bent of his mind. His early business life as an apothecary was contemporaneous with an era of great progress in chemistry and pharmacy. The discovery by Humphrey Davy, in 1808, of the metallic bases of the alkalies potash and soda, proving that they were not simple substances, as before supposed, opened a wide field in chemical research. The discussions in 1810, regarding the constitution of the then termed "oxygenated muriatic acid," decided by Gay-Lussac and Davy to be chlorine; the discovery of iodine in 1811 by Courtois; of bromine by Ballard, in 1826; the introduction as therapeutic agents of the alkaloids of opium and cinchona bark, gave a stimulus to both chemical and pharmaceutical labor.

In discoveries in organic chemistry, the French pharmaciens held a leading position, and as the successive numbers of the "Journal de Pharmacie," the "Annuel de Chimie," etc., arrived, he scanned their pages with eager interest, and delighted in repeating the experiments and confirming the conclusions arrived at by the eminent scientific contributors to these journals, which were then foremost in making known the results of novel investigations in these directions.

His interest in them was scientific rather than commercial; as soon as the *novelty* had passed, he turned to something more recent with equal zest. If there was anything new to be learned in the domains of natural history, botany, geology, or any other branch of science—his attention was always attracted toward it—as well as to any notable achievement in the field of general literature. A plate by Audibon—an essay by Macauley—a volume of true poetry—was equally interesting to him.

As an index of the interest he took in these departments, we find that he became a member of the Franklin Institute at the first meeting after its organization in 1824, and continued a member for fifty years. In 1829 he was elected a member of the American Philosophical Society. He was also a member of the Academy of Natural Sciences.

In December, 1824, an adjourned meeting was held "of gentlemen, native citizens of Pennsylvania, favorable to the formation of a society for the purpose of elucidating the history of the State."

Among the names of nineteen desirous of joining this society we find the name of D. B. Smith, who, at a meeting February 28, 1825, was elected their first Corresponding Secretary. The Historical Society was incorporated June 2, 1826, D. B. Smith being one of the incorporators. The society began in an humble way, occupying for meet-

ings the rooms of the American Philosophical Society, on Fifth street, below Chestnut street; the expenses of the society for fire and lights being limited to $50 per annum. After three years the society removed to the Athenæum, on Sixth street, below Walnut. They now occupy premises on Spruce street, belonging to the grounds of the Pennsylvania Hospital, from which they will soon remove to their new building at Thirteenth and Locust streets. From nineteen members this society has increased to 1,000. Its library contains 17,000 volumes, a collection of 80,000 pamphlets, and an interesting collection of historical relics.

The strongly marked tendency of his mind for scientific and literary pursuits did not prevent his active participation in useful and benevolent movements. In 1816 there was organized in Philadelphia the first society of its kind in the United States, having for its object the encouragement of laboring persons to lay up savings from their wages. Commencing in the store of one of the projectors of the charity on Sixth street, near Minor street, the society was incorporated in 1819 as the Philadelphia Savings Fund. D. B. Smith was one of the corporators, and served as a manager from 1819 to 1835.

After moving first to Decatur street, then to the southeast corner of Walnut and Third streets, the Philadelphia Savings Fund erected the commodious granite building now occupied by them at the southwest corner of Walnut street and Washington Square. The benefit to the class for whom this institution was intended may be judged of from the fact that the deposits have amounted to over ninety-three millions of dollars, and the interest paid to depositors to over eleven millions of dollars.

In 1828 we find the name of D. B. Smith as one of the corporators of an institution which has been of lasting benefit to society—"The House of Refuge." It is interesting to note that this institution followed the establishment of one for a similar purpose in the city of New York—the result of the labors of his old instructor, John Griscom. "In the private parlor of the quiet tenement occupied by John Griscom, in William street, was germinated in 1817 the Society for the Prevention of Pauperism, which, though destined itself to be a brief existence, proved to be the mother of one of the noblest, as it has grown to be one of the most important, and essentially one of the philanthropic institutions of modern times. John Griscom, the founder of the society in 1817, the author of its first paper and of several of

its reports, for six years its Secretary, and the original suggestor of the necessity of a separate institution for juvenile convicts, was appropriately delegated by his associates to present the matter directly to his fellow-citizens by an appeal to their intelligence, their humanity, and to their liberality."[1] The House of Refuge in New York was opened on the 1st of January, 1825.

In 1834, at the earnest solicitation of the Board of Managers of Haverford School (now Haverford College), he accepted the chair of Moral Philosophy, English Literature, and Chemistry, and removed his residence to Haverford.

The twelve years of his residence at Haverford marked a quiet but happy period of his life. "The Principles of Chemistry, prepared for the use of Schools, Academies and Colleges," was issued by him while here, as a text-book for his class; the volume went through two editions. The courses of lectures delivered by him on Ethics, and a review of the lives and doctrines of some of the early members of the Society of Friends, were literary productions of great merit. His comprehensive information, his literary taste, the interest taken in whatever conduced to the happiness of the pupils, elevated him to a position honored and respected by the student and is referred to by many now past the meridian of life, with feelings of grateful affection for his memory.

In 1846 he resigned his position at Haverfood, returned to Philadelphia, and gave his attention to the business at Arch and Sixth streets.

He was President of the first meeting of the American Pharmaceutical Association, held in Philadelphia in 1852, and was made an honorary member in 1856.

The business at Arch and Sixth streets had been gradually expanding, necessitating in 1846 the erection of a four-story back building, to occupy the place of the two-story tenement which occupied the rear of the Arch street lot. The fourth story of the new building was used as a laboratory.

The manufacturing interest developed during the next two years so extensively, that the firm concluded to dispose of their drug business and devote their attention to the new laboratory which they had established on Gray's Ferry Road. On the first of January, 1849, a

[1] Life of John Griscom.

transfer of the business at Arch and Sixth streets was made to Bullock & Crenshaw.

In 1849 D. B. Smith removed to Germantown, and in 1853 he retired from business. The loss of his wife and only daughter after his removal to Germantown were sore bereavements to one who so fully appreciated their affection and social worth. In a spirit of true Christian philosophy, while bowing to the dispensation of Divine will, he did not forget that there was yet work unfinished for his hands; by his interest in the affairs of life he encouraged and gave support to active workers in the field. One of the cherished projects of his latter years was the establishment in Fairmount Park, of a Botanical Garden, and a garden for the acclimatization of plants. He had interviews with persons whom he hoped to interest in the subject, with the design of starting such gardens. He would remark that with the varied soil and climate of the United States there was scarcely a plant which could not be acclimated so as to flourish in some part of our country; that any one who would start and endow such a garden, to be called after his name, would leave a living monument to his memory.

Daniel B. Smith never could have been a specialist, his mind was too full and versatile to be confined closely in any one track; and his sympathies with his friends of similar tastes was so free that he was always ready to turn aside to assist them in any direction in which they sought his counsel or co-operation.

In an address made by him, as President of this College to its graduates, in 1837, he used this language: "Next to the approving smiles of a good conscience, the search after truth and the delights of science are the best solace for a mind chafed with the anxieties of business or oppressed by the unavoidable calamities of life."

In his latter years there came to him what seemed to be a marked period of quiet and rest. Troubles, cares and anxieties had been surmounted, or had passed by. The last ten years of his life were perhaps not the least happy years of his long life.

Most of his contemporaries, and the friends of his youth had passed away, but their children, and successors were his friends as well, and a large and varied circle still gathered about him, from time to time, in his long accustomed sitting-room, where, surrounded by his books, he received the visits of those who were drawn to him by kindred tastes or old associations, with ready sympathy and cordial welcome.

"With all that should accompany old age as honor, love, obedience, troops of friends," with a well assured religious faith and hope, he awaited the closing hour of a life prolonged beyond the common lot of man.

He deceased on the 29th day of March, 1883, in the 91st year of his age, and was interred, on the 1st of April, in Friends' Burying Ground, at Germantown. C. B.

Pulvis Ipecacuanhæ et Opii.—The change made in the preparation of this powder induces me to offer a formula which will yield even better results than that given in our official Codex. The perfect division of the opium and ipecacuanha is, of course, the prime consideration in this preparation, and the following process secures this most perfectly:

Take of extract of opium, dry enough to powder, one part, powdered ipecacuanha two parts, sugar of milk seventeen parts; dissolve the opium extract in a sufficient quantity of water and alcohol in proportion of three of the former to one of the latter to make a smooth paste with the ipecacuanha and sugar of milk. When they are well incorporated put the mass aside in a warm place to dry, after this has been effected rub the whole to an impalpable powder and pass through the finest bolting cloth. It will be seen that this process secures all the activity of the opium and ipecacuanha in a most perfectly divided condition.—T. S. Wiegand.

Tinctura Iodi.—Having noticed the recent articles in regard to the preparation of tincture of iodine, I was led to adopt a method by which tincture of iodine of officinal strength can be easily as well as quickly prepared by percolation, as follows:

The Iodine is to be rubbed in a mortar to a moderately coarse powder (a fine powder retards the process), and packed tightly in a long, narrow percolator (a glass syringe capable of holding two fluid-ounces will answer), the lower orifice of percolator being previously stopped with a plug of absorbent cotton; then the alcohol is carefully poured on the iodine and allowed to percolate slowly.

By this process, a pint of tincture can be prepared in thirty minutes, and for neatness and despatch it is to be preferred to any other way I know of.—W. W. Jost, Ph.G.

COMPARISON OF GALENICAL PREPARATIONS OF THE UNITED STATES AND GERMAN PHARMACOPŒIAS.

By the Editor.

(Continued from page 308.)

Aqua Rosæ.—Fresh rose petals 40 parts, water 200 parts; distil 100 parts. *U. S.*—Attar of rose 4 drops, lukewarm distilled water 1,000 grams; agitate for some time and filter. *P. G.*

Argenti Nitras dilutus, U. S.—Argentum nitricum cum Kali nitrico. *P. G.*—Nitrate of silver and nitrate of potassium equal parts. *U. S.*—Nitrate of silver 1 part, nitrate of potassium 2 parts. *P. G.*

Ceratum Cantharidis, U. S.—Emplastrum Cantharidum ordinarium, *P. G.*—Powdered cantharides 35 p., yellowwax 20 p., resin 20 p., lard 25 p; to make 100 parts *U .S.*—Powdered cantharides 50 parts, olive oil 25 p., yellow wax 100 p., turpentine 25 p.; to make 200 parts. *P. G.*

Ceratum Plumbi Subacetatis, U. S.—Unguentum Plumbi, *P. G.*—Goulard's extract 20 parts, camphor cerate 80 parts, *U. S.*—Goulard's extract 8 parts, lard 92 parts *P. G.*—In consistence the latter preparation is intermediate between the former and the linimentum plumbi subacetatis *U. S.* which is made with Goulard's extract 40 p. and cotton seed oil 60 parts. Both the U. S. P. preparations are considerably stronger than the lead ointment of the P. G.

Ceratum Resinæ, U. S. Unguentum basilicum, *P. G.*—Resin 35 p., yellow wax 15 p., lard 50 p. *U. S.*—Resin 15 p., turpentine 10 p., yellow wax 15 p., olive oil 45 p., suet 15 p. *P. G.*

Ceratum Sabinæ, U. S.—Unguentum Sabinæ, *P. G.*—Fluid extract of savin 25 parts, resin cerate 90 parts; melt, mix and evaporate the alcohol. *U. S.*—Extract of savin 1 part, ointment 9 parts. *P. G.*

Charta Potassii Nitratis, U. S. Charta nitratis, *P. G.*—Potassium nitrate is dissolved in 4 parts, *U. S.*, in 5 parts, *P. G.*, of distilled water; unsized paper is impregnated with the solution and dried.

Charta Sinapis, U. S.—Charta sinapisata, *P. G.*—The latter pharmacopœia simply directs this to be paper, to which powdered black mustard deprived of the fixed oil, has been made to adhere.

Collodium.—Pyroxylin 4 p., stronger ether 70 p., alcohol 26 p. *U. S.*—Collodion cotton 4 p., stronger ether 84 p., alcohol 12 p. *P. G.*

Collodium cum Cantharide, U. S. Collodium cantharidatum, *P. G.*—Exhaust cantharides 60 p. with chloroform, distil and evaporate

until 15 parts are left which dissolve in 85 p. of flexible collodion. *U. S.*—Macerate cantharides 50 p. with ether 80 p. for three days, strain, wash the residue with sufficient ether to obtain 42 parts of filtrate; to this add collodium cotton 2 parts, alcohol 6 parts. *P. G.*—Apparently the latter preparation is of nearly double the strength of the former; but when it is observed that fully one-half the etherial liquid is wasted by being retained in the powdered cantharides, it must obviously be somewhat weaker than that of the U. S. P.

Collodium flexile, U. S. Collodium elasticum, *P. G.*—Collodion 92 p., Canada turpentine 5 p., castor oil 3 parts *U.* S.—Collodion 98 p., castor oil 2 parts *P. G.*

Confectio Sennæ, U. S. Electuarium e Senna, *P. G.*—The pulpy liquid obtained with water from cassia fistula 16 p., tamarind 10 p., prune 7 p. and fig 12 p., is mixed with sugar 50 parts and evaporated to 84 parts; mix this with powdered senna 10 p. and coriander 6 parts. *U. S.*—Mix powdered senna 10 p., simple syrup 40 p., and pulp of tamarind 50 parts. *P. G.*

Decoctum Sarsaparillæ compositum. The German Pharmacopœia recognizes a strong and a weak decoction, which resemble the formerly much used Zittmann's decoctions without the use of vermilion and calomel; the present formula is a slight modification of that contained in *P. G.* edit. I.

SOME FACTS CONCERNING FILTRATION.

By Charles Symes.[1]

The process of percolation has engaged so much attention of late years that it is not surprising to find the less important, although kindred one, filtration, somewhat neglected. It may be thought that all has been accomplished that could reasonably be desired for rendering this operation as complete as it can be, or that it is too simple to merit much consideration. Be this as it may, practical pharmacists know quite well that they are not unfrequently troubled to conduct it to their entire satisfaction.

The more serious difficulties connected therewith do not perhaps occur to each individual very often, hence the danger that the experience gained on one occasion is overlooked or not made available when circumstances again arise for its application.

[1] Read before the Liverpool Chemists' Association.

The subject seems naturally to divide itself under three heads, viz.: The liquid to be filtered, the medium through which it is to pass, and the form in which that medium is presented. As it is not intended, however, to make these notes exhaustive, it will be unnecessary to deal with it in precisely this order. Let us rather take some facts as they occur and see if we can by their consideration render available anything of practical value for every-day use.

The most simple operation of this kind is to filter through paper in small quantity a liquid containing a solid body for which it has no affinity.

Text-books tell us at the outset that it is very necessary to use a funnel, the sides of which form an angle of 60°, this being the angle formed by the folded paper. Now I take exception to this very exacting requirement. We do not get our straining bags or percolators made of such a shape, and that because our experience teaches us how much more suitable is a form in which the angle is decidedly more acute; the same volume of liquid in this latter form producing a longer column, and consequently a greater downward pressure. Then, as to the paper fitting the funnel; we know quite well that all else being equal, the less perfectly it fits, the more rapidly filtration proceeds, so that, for any useful purpose it is quite unnecessary to insist on this very orthodox shape. One has, say, a pint of fluid to filter, and for this purpose a funnel of about 8 ozs. or 10 ozs. capacity is taken. I would use one of the long French pattern, fold the filter in plaits and before opening it out, place it fairly well down in its position in the funnel; or if there were reasons for not plaiting the filter, then it should be folded first in half, and then the two outer portions, representing rather more than one-eighth each of the entire paper, should be turned back so as to overlap each other slightly at the top, and not to form a very acute point. In either case, the paper whilst being fairly well supported would have comparatively little surface adhesion, and but small resistance would be offered to the passage of the fluid in any part. Funnels of this shape in much larger sizes can be used with advantage, but it is then desirable to have them ribbed. The ribs of funnels (especially of large ones) to be of any real value should be much deeper than they usually are, and should not run vertically, but spirally. A piece of muslin placed between the paper and funnel not only strengthens and supports the paper, but assists filtration by preventing adhesion; a cone formed of coarse hair

cloth is still better. For larger sizes, say of from 4 to 8 pints, it is advantageous to dispense with the funnel altogether, and to use an inverted cone formed of linen or stout calico; the edges being fastened to a wooden hoop, which, resting on a deep earthenware pan, forms an efficient support for the paper, the liquid passing through with equal facility over the entire surface, a suitable cover placed over it excluding the air, and the process goes on under comparatively satisfactory conditions. A self-feeding arrangement can be fitted to this, if it be so desired, in a very simple manner.

When, by exhausting the receiver, atmospheric pressure is brought to bear on the liquid in a funnel, then the latter should be of the *orthodox* shape, as with it air is less likely to pass; but this requirement militates against the advantages that such a method would otherwise possess. The point of the filter should be supported by a cone of platinum or zinc, or by a packing of tow or prepared wool.

English paper makers do not appear to have devoted much attention to the prodnction of filters in any variety, and for this reason we derive our supplies chiefly from the continent. It is a well-known fact that holding almost any of the common filters up before a strong light they are seen to be perforated more or less with minute pinholes, so that when in use it is only after these have become filled up that the whole of the solid matter is separated, and the liquid passes through bright. Each time a fresh portion of liquid is added, the disturbance caused thereby is liable to remove some of the particles which are acting as a filling, and if this occurs filtration again becomes imperfect. These filters, although very cheap, do not pay to use if time and convenience are taken into consideration. There is, however, considerable difference in the efficiency of the various kinds of filtering papers, even when free from this defect. The presence of animal matter, as in the gray filter, increases the strength, but diminishes its working capabilities, and the existence of mineral matters therein does the latter, but not the former. The papers specially prepared by Messrs. Schleicher and Schüll are practically free from all extraneous matters, the pulp having been treated with hydrochloric and hydrofluoric acids, etc. They are an example of what can be accomplished in this respect, but at the same time they are too expensive for general pharmaceutical purposes, and, indeed, are only made in comparatively small sizes suitable for analytical work. For operations requiring filters of 7 inches diameter (before folding), the Rhenish papers, No. 595, are, in

my opinion, the most suitable; for larger sizes the French stout plaited or plain papers, taken in all their qualities, give the best results. The French also make a paper specially suitable for syrups, thick to support the weight, and yet sufficiently pervious to allow of fairly rapid filtration. I find, however, in very large sizes, a double sheet of Rhenish paper in an inverted case of linen, as already described, answers even better.

Some fabrics, such as swansdown, close textured twilled calico, etc., filter as brightly as paper does, and may be used for that purpose as distinct from ordinary straining, provided the solid particles separate from the liquid in which they are suspended with ease, but when this is not the case they are of much less value; indeed, with paper as a medium, slimy deposits present considerable difficulty. Pepsin wine, prepared from the fresh, undried pepsin, might be regarded as typical of this class of liquids; the tendency being to choke up the pores of the filter almost immediately the operation commences. In such cases some kind of coarse straining material placed within the paper cone helps materially to obviate the difficulty. Hair cloth and thin coarse flannel answer well for this purpose; they operate by collecting on their rough projecting surfaces the larger proportion of the undissolved slimy matter, without becoming sufficiently choked up to materially impede the progress of the operation.

Succus taraxaci, as expressed from the root and mixed with spirit according to the B. P. instructions, is typical of a class containing a large quantity of starchy matter and where subsidence in a closed vessel previous to filtration is of great service. The liquor from poppy capsules, in the process of preparing syrupus papaveris alb., furnishes us with an example of a liquid containing a large quantity of albuminous matter and mucilage which, when coagulated by spirit, has to be filtered off, and here again subsidence in a closed vessel helps the separation materially. The greater portion of the liquor can, after a time, be poured almost bright into the filter, and the remaining soft mass can with care be slowly pressed almost dry; the chief difficulty in this latter operation being to press sufficiently slowly to separate the liquid from the solid, and yet not to expose it to the air long enough to lose much spirit by evaporation, as in that case some of the solid portion would be again taken up in imperfect solution.

For removing suspended particles from strong acids, spun glass, known as "glass wool," answers best, but this might be regarded as

straining rather than filtration. With ordinary liquids, when there is but little insoluble matter, absorbent cotton not only strains, but by fairly tight packing filters brightly. In cases where it is desired to save the deposit, and possibly to dry or incinerate it, asbestos paper can be recommended; the liquid passes through it slowly, but it is very strong, and it is indestructible by heat. Paper lint, as introduced from America some few years ago, answered well as a filtering medium, being both strong and absorbent; but I am not certain whether its manufacture has been continued.

So far we have considered filtration as conducted only in funnels or funnel-shaped arrangements, as the various forms in which atmospheric pressure is commonly employed are described in works which treat of such matters. They are chiefly those in which a long column of liquid is carried above the point of filtration, as in Mr. Proctor's arrangement; where exhaustion is obtained by means of a syringe underneath; or suction by means of a bent tube, as described by Mr. Schacht at the meeting of the Conference at Birmingham in 1865. Recently there has been advertised a "Filtre Rapide," in which the filtering material is placed on a frame or support rising up within the cylinder and forming a space in the centre into which the filtered liquid flows laterally to a receiver below. It is a compact and ingenious arrangement, but I have not any experience from which to speak of its usefulness.

To my mind upward filtration is the direction in which we should work, and from which we may expect the best results.

Some years ago Mr. William R. Warner, of Philadelphia, invented an oil filter on this principle, consisting of two vessels in superposition, measuring altogether about 40 inches in height by 10 inches in diameter, and which is said to be capable of filtering a barrel of oil per day. This, of course would depend on the nature of the oil and the temperature at which it is used.

Recently I have devised a form of upward filter in one vessel only, and have added to it a suction tube. It occupies comparatively little space, is simple in construction, efficient in action, and can be made by any tinman at little cost.

It consists of a plain tin cylindrical vessel (A) with a tap-hole (B) $1\frac{1}{2}$ inch from the bottom; it is 22 inches high and 8 inches diameter. A tin tray (C and Fig. 2), 7 inches in diameter, with a vertical rim 1 inch or $1\frac{1}{4}$ inch deep, has a hole (B′) in the rim; this and the hole

near the bottom of the cylinder being fitted with a short female screw of the same pitch of thread. Over the tray the filtering material (D) (flannel, calico, paper supported by muslin, or any other that may be suited to the liquid to be operated on) is tied securely; it is then inverted and placed in the cylinder so that the holes B and B′ are exactly opposite one another. A tap (E) with a bend at a right angle is screwed in so that it holds the two together and assists a short leg (F) in supporting the tray in position. To the end of the tap is attached an india-rubber tube turned on itself (G), or a long glass tube of similar construction (in fact like a large safety funnel deprived of the thistle head), which can be attached by a short piece of rubber tube. It will be obvious that any communication between the tap and the contents of the vessel must be made through the filtering medium which covers the inverted tray, and that any deposition which takes place must be on the bottom of the vessel itself or on the opposite side of the tray, but not on the filtering surface, and herein lies the special advantages of the filter I now introduce. The use of a long delivery tube is not new; it formed part of an oil filter patented by Mr. Britten, of Liverpool, some years before Mr. Schacht's application of it to his filter. Neither is upward filtration new, as already stated; but the combination of the two and in this particular form will, I believe commend itself to any one who will give it a trial.

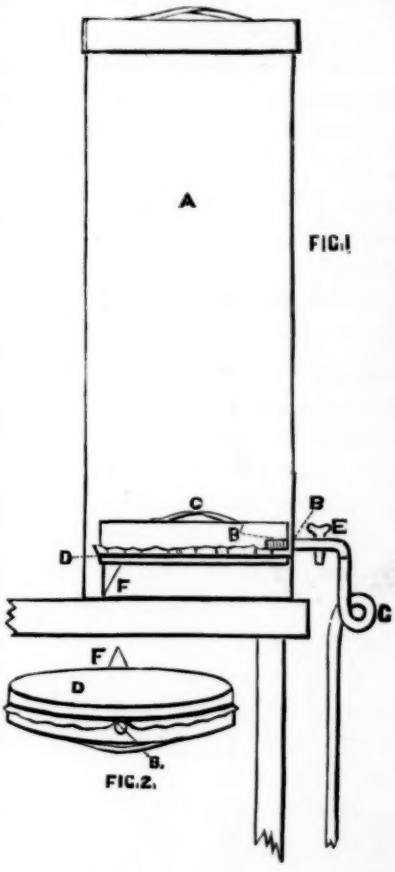

FIG. 1.

FIG. 2.

The dimensions given furnish a filter of about 3 gallons capacity at a cost of some ten or twelve shillings.—*Phar. Jour. and Trans.*, May 19, 1883.

THE TESTING OF OLIVE OIL.

By Dr. O. Bach.

Abstracted from Chem. Zeitung through Schw. Wochenschrift für Pharm., No. 15 (1883), pp. 139–142, by Dr. Fred. B. Power.

For the purpose of a general acquaintance with a fixed oil the so-called elaïdin test is first applied, and with this is connected the test with nitric acid. The oil to be tested (about 5 ccm.) is actively shaken in a test-tube for one minute with an equal volume of nitric acid, spec. grav. 1·30, when after this time the oil will have assumed the following color: olive oil, pale green; cotton seed oil, yellowish brown; sesame oil, white; sunflower oil, dirty white; ground nut oil, rape seed oil and ricinus oil, a pale rose color. Immediately after the observation of the color the test-tube is placed in a water-bath containing water in active ebullition, and allowed to repose therein for 5 minutes. It is hereby shown that the action of the nitric acid is most violent upon the cotton seed oil and sesame oil, occasionally so violent as to cause the oil to be thrown out of the glass. After the expiration of 5 minutes, and after the test-tube has been taken out of the water-bath, the following colors are shown: olive oil and rape seed oil, orange-yellow; ricinus oil, golden-yellow; sunflower oil, reddish-yellow; sesame and ground nut oils, brownish-yellow; cotton seed oil, reddish-brown.

After standing for 12 to 18 hours at about 15°C., olive oil, rape seed oil and ground nut oil will have firmly solidified, ricinus oil and cotton seed oil become salve-like (smeary), whilst sesame oil remains perfectly liquid.

Mixtures of olive oil with small amounts of cotton seed oil and sesame oil are thereby characterized that at first indeed the entire mass, although more darkly colored, solidifies like pure olive oil, but after from 24 to 36 hours a brown oil separates upon the surface of the firmly solidified mass, whilst the lower layer now shows the yellow color of the pure olive oil. The presence of oil of rosemary, as such usually occurs in the sophisticated oils, exercises no influence by the agitation with cold nitric acid, but after heating it imparts to the oil a slightly darker color. Oils which have been treated with alkalies show the same behavior as pure oils.

For the determination of the melting point of the fatty acids, 10 grams of the oil are saponified on a water-bath with 5 grams of potas-

sium hydrate and the addition of a little water and alcohol. After the complete dissipation of the alcohol the remaining soap is dissolved in hot water, and from the clear solution the fatty acids are separated by the addition of hydrochloric acid. When the fatty acids after continued heating float upon the saline solution as a perfectly clear oil, a portion of the oily layer is brought into a small, narrow, thin-walled test-tube and allowed to solidify therein. The determination of the melting or solidifying point is effected by placing the small test-tube containing the fatty mass in a beaker filled with water, which is warmed by means of a small flame, and by the aid of a thermometer dipped in the fatty acids and gently moved to and fro during the observation, the point is precisely observed when the entire mass becomes perfectly clear, and that when clouds begin to form about the bulb containing the mercury. It is now shown that the acids derived from pure olive oil, without restriction as to the origin of the latter, melt between 26·5 and 28·5°C., and solidify not lower than 22°C. The oils applied for the adulteration of olive oil show with relation to the melting point of their fatty acids very considerable deviations from the former. The melting and solidifying points, respectively, of the acids of cotton seed oil, sesame oil and ground nut oil are considerably higher, those of sunflower oil, rape seed oil and ricinus oil considerably lower, than those of the acids of olive oil.

The fatty acids of Cotton seed oil melt at	38·0°C.,	and solidify at	35·0°C.
Sesame oil	" 35·0	"	32·5
Ground nut oil	" 33·0	"	31·0
Sunflower oil	" 23·0	"	17·0
Rape seed oil	" 20·7	"	15·0
Ricinus oil	" 13·0	"	2·0

The above figures deviate so far from the data obtained with pure olive oil that by the determination of the melting point adulterations to such an extent as occur in commerce may very readily be detected; for a Gallipoli olive oil, mixed with 20 per cent. of sunflower oil, melts already at 24°C., and solidifies first at 18°C.[1] A Nizza oil, mixed with 20 per cent. of cotton seed oil, melts first at 31·5°C., and solidifies already at 28°C. A Gallipoli oil, mixed with 33⅓ per cent. of rape seed oil, melts already at 23·5°C., and solidifies first at 16·5°C.; mixed with 50 per cent. of rape seed oil, it melts already at 20°C., and solidifies first at 13·5°C., etc.

[1] The fatty acids are always to be understood.

For testing the solubility of the fatty acids in alcohol-acetic acid, the method proposed by David[1] for the estimation of stearic acid is applied.

The principle of this method consists therein that when acetic acid is added by drops to an alcoholic solution of oleic acid a moment occurs when the oleic acid becomes perfectly separated, but that stearic acid, which is insoluble in a mixture of alcohol and acetic acid, also remains insoluble when the mixture contains oleic acid. In order, therefore, to apply the stated method for the testing of olive oil, the following manipulations are to be performed: Equal parts of glacial acetic acid and water are mixed together in a flask; furthermore, into a small tube, divided into $\frac{1}{10}$ ccm., are brought 1 ccm. pure oleic acid, 3 ccm. of alcohol of 95 per cent., and 2 ccm. acetic acid. Hereby nothing should be separated; but if an additional $\frac{1}{10}$ ccm. of acetic acid is added a turbidity begins to occur, and when there floats upon the mixture of alcohol and acetic acid 1 ccm. of oleic acid (or at first more) the liquid is ready for application. If this is not the case, the proportions are varied until the object is attained that, by the addition of $\frac{1}{10}$ ccm. acetic acid a complete separation takes place. If this is attained, alcohol and acetic acid are then mixed in the proportions indicated by this preliminary experiment, *e. g.*, 300 alcohol and 225 acetic acid. To the alcohol-acetic acid from 1 to 2 grams of stearic acid are then added, and the supernatant clear solution employed for the experiment. Of the oil (acids) to be tested 1 ccm. is first placed in the tube, 15 ccm. of alcohol-acetic acid added, the mixture actively agitated, and the whole allowed to repose at a temperature of 15°C. If the olive oil is pure, it dissolves to a perfectly clear liquid, and the solution also retains this character. Cotton seed oil is insoluble, and the solution obtained by gently warming solidifies at 15°C. to a white jelly. Sesame oil and ground nut oil show a similar behavior. Sunflower oil dissolves, but separates at 15°C. a granular precipitate. Rape seed oil is perfectly insoluble, and floats as an oily layer upon the surface. Ricinus oil, on the contrary, is soluble to a clear liquid, precisely like olive oil, and can therefore not be detected in olive oil by this method. For the recognition of ricinus oil, beside the direct testing of the oil with alcohol, the determination of the melting point of the acids is of service.

Olive oil with 25 per cent. of cotton seed oil separates a granular

[1] "Compt. Rend.," 1878, p. 1416.

precipitate, likewise by the addition of 25 per cent. of sesame oil; but smaller additions do not admit of recognition by this method. With an admixture of rape seed oil the boundary of recognition is first with 50 per cent., and it is then first that the oil perfectly separates from the alcohol solution.

The considerable depression of the melting point of the fatty acids, together with the sulphur reaction and the insolubitity of the oil in alcohol, presents, however, also here a means for the recognition of small quantities in olive oil.

ON CINCHOCEROTIN.

BY A. HELMS.

Abstracted from "Archiv der Pharm." Bd. 221, Heft. 4, 1883; pp. 279–283.
By Dr. Fred. B. Power.

Under the name of *cinchocerotin* Kerner exhibited at the world's exposition in Paris and London, in 1859 and 1862 a constituent of the cinchona barks which had been discovered by him. With regard to the method of preparation of cinchocerotin, Dr. Kerner has communicated the following to Prof. Flückiger:

"Flat South American Calisaya bark was dried with milk of lime, extracted by boiling alcohol and the liquid cooled. The cooling of the liquid was effected in copper tubes, through which the solution was slowly conducted. After from six to nine months the tubes were incrusted with crude cinchocerotin."

The crude cinchocerotin is a brown mass, from which two different constituents may be prepared, viz.: a crystalline white body, readily soluble in alcohol, and, in much smaller amount, a whitish-yellow substance, sparingly soluble in alcohol. The latter is likewise sparingly soluble in ether, chloroform, benzol, and the more volatile portions of petroleum, but, on the contrary, is more readily soluble in boiling amylic alcohol and xylol, from which solutions it separates in an amorphoses form on cooling. It is decomposed at 230° C., without melting, and forms by heating with glacial acetic acid a white, crystalline acid which melts at 54° C., and is readily soluble in alcohol, ether and petroleum (b. p. 60° C.) This acid forms sparingly soluble barium, lead and calcium salts, and soluble salts with the alkalies. Further experiments could not be made as only a small amount of material was at hand, and by the present method of conducting the quinine factories the cinchocerotin is no longer obtained.

The first mentioned crystallizable substance, for which the name cinchocerotin may be retained, forms white, very light, crystalline scales, which, when heated upon platinum-foil, burns without any remarkable odor. The melting point is at 130° C.; when more strongly heated, it partially sublimes with decomposition; if, however, carefully heated in a current of carbonic acid, it sublimes without decomposition. It dissolves readily in ether, chloroform and alcohol, but does not dissolve by boiling with water, hydrochloric, dilute sulphuric, and glacial acetic acids. By boiling with a solution of carbonate of sodium or caustic soda it is not attacked, and also not by alcoholic soda; with concentrated sulphuric acid it gives a reddish-brown solution. By the action of nitric acid it is converted into a yellow resinous-like body; and by the action of bromine a brown, uncrystallizable substance was obtained. When melted with potassium hydrate, cinchocerotin becomes yellow, but does not mix therewith, and when more strongly heated it volatilizes partially with decomposition.

The analysis of cinchocerotin afforded numbers corresponding to the formula $C_{27}H_{48}O_2$. By oxidation with potassium bichromate and sulphuric acid a green liquid and a green precipitate were obtained. In the liquid, by distillation, acetic and butyric acids were detected; from the green precipitate by solution in caustic soda and supersaturation with an acid, a yellow precipitate was obtained, which, when washed, and dissolved in alcohol, had an acid re-action, and afforded upon the evaporation of the solution small, wart-like crystals, which may be designated as *cinchocerotinic acid*. After recrystallization the acid melted at 72° C., and afforded upon analysis numbers corresponding to the empirical formula $C_{16}H_{22}O_2$.

From the above results it is manifest that cinchocerotin is not a wax or a fat, and undoubtedly possesses a very high molecular weight. To conclude from its properties and its occurrence, the author believes it capable of being classified in the neighborhood of betulin and cerin.

Permanganate of Potassium was recommended in diabetes by Sampson, as long ago as 1853 (London Lancet), and has been again tried by Massin within the past two years, with success in some instances and complete failure in others. He conjectures that its influence is probably exerted on the liver, as manganese is eliminated by that organ, and even small doses injected under the skin cause fatty degeneration of it. He has observed that manganese is especially useful in those cases in which there is hepatic engorgement.— *Weekly Med. Rev.*, May 5, 1883.

A NEW ALKALOID IN CANNABIS INDICA.

By Matthew Hay, M. D.,
Demonstrator of Practical Materia Medica, University of Edinburgh.

PRELIMINARY NOTICE.

Cannabis indica, or Indian hemp, is exceptional as a narcotic plant in respect of no alkaloid, possessing the action of the plant, having been as yet separated from it. The so-called cannabine obtained by T. and H. Smith, of Edinburgh, many years ago, and said by them to possess the active and narcotic properties of the cannabis, is certainly not a pure principle, and is, probably, a mixture of resin with varying proportions of the narcotic principle. It possesses almost solely the characters of a resin, and is described by the Smiths as such; but were it the true active part of the plant, it is certainly far removed from all other narcotic principles, inasmuch as none of them is chemically related to the class of resins. One specimen of cannabin which I obtained some time ago from Merck, of Darmstadt, and which, I was given to understand, was prepared exactly according to Smith's process, possessed little or no narcotic action.

A few years ago, Preobraschensky ("Pharm. Zeitsch. f. Russland," 1876, p. 705) made a chemical examination of a quantity of haschisch which he brought with him from China, whither in 1873 he had accompanied an expedition, and was enabled, according to his own statement, to separate from it a volatile alkaloid, which he held to be identical with nicotine, and which he believed to be the active part of cannabis. This, in view of the distinctive and very different action of cannabis, was somewhat remarkable. It is highly probable, as has been suggested by Dragendorff and Marquiss ("Pharm. Zeitung," 1877), that the haschisch used by Preobraschensky was mixed with tobacco, which it often is in Eastern countries.

Recently, Louis Siebold and Bradbury have reported to the British Pharmaceutical Conference (1881) that, after an elaborate investigation, they have arrived at the conclusion of Dragendorff and Marquiss, and that in the course of their investigation they made the interesting discovery that pure cannabis does actually contain a volatile alkaloid, which does not, however, possess the characters of nicotine. They separated it in very small quantity, obtaining not more than 2 grains from 10 pounds of Indian hemp. They give to it the name of cannabinine. They record no observation as to its physiological action; and

they, therefore, leave it doubtful as to whether this volatile alkaloid is the narcotic principle of cannabis.

It is evident from these and many other researches that it is no easy task to arrive at correct conclusions as to the active principle of cannabis indica.

A considerable time ago, I commenced a chemical examination of this drug, at the suggestion of Professor Schmiedeberg, of Strassburg, the results, so far, of which lead me to believe that cannabis indica contains several alkaloids. In a future communication I hope to be able to give an exact description of the distinctive characters and toxic action of each. In the meantime, I shall content myself with the description of one which I have obtained in a considerable degree of purity, and one which, rather remarkably, possesses an action similar to that of strychnia. It is evidently, therefore, quite a secondary alkaloid of the cannabis, and reminds one of the thebaine of opium.

This alkaloid was obtained from a watery infusion of powdered cannabis indica by treating it with a solution of subacetate of lead, and filtering. To the filtrate was added ammonia, and the precipitate removed by filtration. The filtrate, acidulated with sulphuric acid, was now treated with a solution of phospho-wolframic acid in order to precipitate the alkaloids present. The precipitate, which was fairly abundant, was, after the fluid had been removed by filtration and washing with dilute sulphuric acid and pressing, mixed with barium hydrate and water, which formed an insoluble wolframate and set free the alkaloids. The filtrate was now deprived of its excess of barium by means of a stream of carbonic acid gas and again filtered. The filtrate was at a gentle heat evaporated almost to dryness and acidulated with sulphuric acid and treated with absolute alcohol. The sulphate of the alkaloids thus formed was partially soluble in alcohol, partly not. It was from the soluble part that the alkaloid in question was procured. The sulphate was converted into a chloride by treatment with barium hydrate, afterwards with carbonic acid to remove excess of barium, and, finally, with hydrochloric acid to neutralization. The chloride was evaporated and treated with absolute alcohol, in which it in part dissolved. From the solution, by addition of excess of carbonate of soda and frequent shaking with ether, an alkaloid was obtained in the form of colorless needle-like crystals.

The alkaloid was easily soluble in water, soluble also in alcohol, and more slowly soluble in ether and chloroform. It caused tetanus in

frogs in exactly the same manner as strychnia, increasing the excitability of the reflex centres of the spinal cord. It did not give a violet color with sulphuric acid and bichromate of potash. It was, therefore, although similar in action to strychnia, not chemically identical with it. A solution of it in water was precipitated by the various alkaloidal precipitants, platinic chloride, iodide of potassium and mercury, phospho-tungstate of soda, phospho-molybdic acid, phospho-wolframic acid, etc.

Although I obtained the alkaloid from 1 kilogram of cannabis, yet the quantity of it was so small, that it was insufficient for an elementary analysis.

To this alkaloid I propose to give the name of tetano-cannabine, as indicative of its action.—*Phar. Jour. and Trans.*, June 2, 1883, p. 998.

COLORED INSECT POWDER.

By W. L. Howie, Ph.C., F.C.S.

Mr. Conroy has done good service in calling the attention of the trade to the adulteration of insect powder in the paper read before the Liverpool Chemists' Association, and published in a recent "Journal." I have been working on the same subject for some time past, and as my experience and results differ from Mr. Conroy's, I think it well, without further delay, to throw my notes into form for publication.

The adulterant mentioned in the report of the Liverpool meeting as having been found by Mr. Conroy is fustic, which is one I have not met with although particularly looked for. I have not yet, however, hit upon a satisfactory method by which one can readily detect small proportions of this substance, as well as other yellow dye stuffs, which I have reason to suspect are used to "reduce" the powder. I have found microscopical examination unreliable, artificially colored insect powders, to my knowledge, being passed as genuine even by a skilled microscopist, and I have found comparison with test samples prepared by blending various pigments with genuine powder in a mortar very misleading, as little difficulty is then experienced in detecting the specks of the coloring ingredient, but in the commercial powders the pigment is without doubt added during the grinding process, and if well selected becomes so incorporated with the vegetable tissue as to escape any but an experienced eye, even when aided with the polariscope. I have, therefore, not relied upon the microscope as far as my

investigation has proceeded, finding chemical method more exact and trustworthy.

I have examined about twenty samples, none of which was supplied to me specially for examination, but purchased in packets, or obtained as *bonâ fide* samples offered by wholesale dealers to retailers in the ordinary way of business. With the exception of No. 3 following, all are powders from well-known firms, most of whom claim to be grinders. Selecting twelve as typical, both as to source and general character, I placed them side by side and arranged them according to their depth of yellow color, with the following result:

No.	Vendor's Definition.	Color.	Adulterant.
1.	Insect powder	Drab	Genuine.
2.	" "	"	"
3.		Olive drab	"
4.	From closed flowers	Yellowish	"
5.	All closed flowers	"	"
6.	Open flowers	"	"
7.	Packet powder	Yellow	Chrome.
8.	" "	"	"
9.	Opt	"	"
10.	All closed flowers	"	Turmeric and chrome.
11.	Foreign	"	Chrome.
12.	Dalmatian	Very yellow	Turmeric.

After arranging the powders in this manner by the eye, it was apparent that between the colors of 6 and 7 there was a perceptible gap, and when by testing it was proved that Nos. 7 to 12 were artificially colored, it will be seen that appearance is some indication of genuineness.

For further examination I discarded the first suggested plan of igniting the powder with potassium nitrate and testing the residue, and prefer what I think a more delicate and easy, if somewhat crude method. Incinerate say 20 grains of the suspected powder on platinum foil, and carefully weigh the ash as well as note its character. For example, take No. 3, which had been reduced to powder in a mortar by myself from authenticated flowers. The ash was grey in color

and weighed 1·2 grain. This is placed in a test-tube, and a few drops of strong hydrochloric acid added, which causes some effervescence; heat is then applied to dissolve the ash, which consists chiefly of potash salts. The solution is colorless and the addition of a little water prepares it for the application of the usual tests.

Sulphuretted hydrogen gives no precipitate nor potassium iodide a yellow color nor precipitate; but it ought to be here noted that ammonium sulphide and potassium ferrocyanide give the characteristic reactions indicating iron, which I found in small quantity in the ash of the genuine flowers, as well as in all the powders. This metal seems to exist in greater abundance in the florets, and in much less proportion in the seeds, and the indications of iron must be noted, as I have found two powders containing it in such quantity as to suggest that some ferruginous earth, such as ochre, had been used to make weight or color. One of these powders is a proprietary article, and the other a small odd sample, which I cannot replace, therefore neither appears amongst the selected twelve.

The behavior of a powder colored with the usual adulterant, viz., yellow chrome, is quite different. The ash is brownish, or showing brown patches at the most exposed parts, and the weight is greater; thus No. 7 yielded 2·1 grains. There is the same effervescence with HCl; but part is insoluble, and the solution on heating becomes distinctly green, which with a black precipitate with H_2S may be taken as conclusive proof of the presence of lead chromate. KI gives a yellow color, and if the HCl be not in excess a yellow crystalline precipitate separates.

Any attempt to judge of the amount of added chrome by estimation of the lead present I found futile, which is readily understood when it is remembered that the finer chromes are said to be "struck" on magnesia, and undoubtedly the alkaline earths are found to bulk largely in the composition of many.

No. 12, although of a strikingly deep yellow color, gave only 1·2 grain of grey ash, and thus suggested that some vegetable coloring had been used, and on the sample being tested by the method devised by myself for the detection of artificial coloring in rhubarb and other powders ("Pharm. Journ." [3], vol. iv, 354) the supposition proved to be correct.

Pieces of white blotting paper corresponding to the number of samples are taken and named or numbered, and a few grains of the sus-

pected powder placed in the centre and pressed compactly down with a piece of paper or a spatula. Chloroform (or other menstruum) is then carefully dropped from a pipette on the centre of the powder till it has moistened all and extended some distance beyond the powder. The paper is then allowed to dry, wiped free of the powder, and the stain, if any, tested by suitable reagents.

Treated in this manner the genuine powder yields a slight yellow color to the paper; but No. 12, and in less degree No. 10, gave a very distinct stain, which an atom of boracic acid and a drop of HCl at once identified as due to turmeric. The stain from genuine powder becomes bluish-green with nitric acid, brownish with sulphuric, and only exhibits a slight darkening with potash solution. The turmeric stain becomes reddish brown with nitric acid, dark brown with sulphuric acid or potash. Fustic seems to yield nothing to chloroform, but a yellow stain obtained with alcohol becomes a distinct brown with nitric acid, and shows little change with sulphuric acid or potash. Solution of a ferric salt strikes a bluish black both with the fustic and pyrethrum stain obtained with alcohol.

When fustic is boiled for some time in water with zinc and sulphuric acid the solution gradually assumes a bright red color, owing to the transformation of one of the coloring principles, morintannic acid, into phloroglucin and machromine.

The flowers of *Pyrethrum cinerariæfolium* treated in the same fashion show no change, but I have been unable to get this very promising reaction to indicate distinctly anything under 20 per cent. of fustic in insect powder, although I am hopeful that an improved method may yet result in greater delicacy.

No.	Percentage of ash.	No.	Percentage of ash.
1	6·2	7	10·5
2	7·1	8	9·6
3	6·	9	9·2
4	6·8	10	8·0
5	6·2	11	9·4
6	6·2	12	6·0

The above table shows the percentage of ash yielded by the twelve samples, and, comparing that with the names given by the vendors, little relation will be observed between them. From more exact analysis I take the first six to be genuine powders, with the exception of No. 6, which has a suspicion of some dye wood, which I have not yet

identified, attached to it. Nos. 7 to 11 are adulterated with chrome, from 3 per cent. to nearly 6 per cent. No. 10 has the addition of a very small percentage of turmeric, and No. 12 quite 5 per cent. of that root. It is not to be assumed that excepting these slight admixtures these powders are genuine; for although undoubtedly it is bad enough when having ordered a hundredweight of insect powder one finds 5 to 7 pounds of chrome yellow, costing 4d. to 10d. per pound, as part of the delivery, the presence of such extraneous color is suggestive of its being merely a cloak for a more weighty adulteration, such as Mr. Conroy has discovered, or as that referred to by Mr. E. V. Riley ("Pharm. Journ." [3], vol. xii, 789), who says that "the stalks and leaves are ground with the flowers in the proportion of one-third of their weight;" whilst on the authority H. Kalbruner ("Pharm. Journ." [3], vol.v, 305), "The plant itself (minus the flowers) powdered appears to be quite inactive."

In face of the foregoing facts it seems advisable that purchasers should avoid the foreign powder, which seems to be always colored, and not too trustingly accept any guarantee, even of professed grinders, but verify for themselves each purchase, which by the means above stated can readily be done in a few minutes even by a junior assistant. —*Pharm. Jour. and Trans.*, May 19, 1883.

MADDER COLORS.

By A. Wurtz.

This paper is a report drawn up by Wurtz on a memoir of Rosenstiehl on the coloring matters of the madder root. From this root five separate coloring substances can be extracted: alizarin, purpurin, madder-orange, pseudopurpurin, and purpuroxanthin. The researches of Graebe and Liebermann have fixed the constitution of the two former, whilst Rosenstiehl has studied more especially the three latter substances. He has shown that purpuroxanthin is isomeric with alizarin, and can be converted into purpurin by fusion with potash; and inversely purpurin can be reconverted into purpuroxanthin by the action of reducing agents, but if the action be prolonged, hydropurpuroxanthin is formed. Rosenstiehl has also devised a new method of formation of purpurin. On heating the madder root with sulphurous acid, Kopp obtained a product known as *commercial purpurin;* as this substance is useless for dyeing purposes, it has been customary

to heat it to 180° with glycerol to convert it into *solid purpurin*. This *rationale* of the process Rosenstiehl has explained; the "commercial purpurpin" contains pseudopurpurin, which possesses no tinctorial properties, but is easily decomposed into carbonic anhydride and purpurin; this latter dyes a brilliant madder-red. Rosenstiehl has succeeded in separating the pseudopurpurin, and shows that it is a monocarboxyl-derivative of purpurin, thus: purpurin, $C_{14}H_5O_2(OH)_3$, pseudopurpurin, $C_{14}H_4O_2(OH)_3COOH$.

This fact has thrown an unexpected light on the practical industry of the madder; for it has long been observed that madder of Avignon gave a more solid dye-stuff than the madder of Alsace. It is now shown that this fact is due to the greater quantity of lime in the Avignon soil, which serves to eliminate the pseudopurpurin as a lime compound, and prevents it being fixed to the tissue of the root.

It has also been customary in Alsace to add small quantities of chalk to the dye-baths; this also prevents the fixation of the pseudopurpurin which passes into the residues, where it may be decomposed by sulphuric acid and converted into useful purpurin. Rosenstiehl has also studied madder-orange, identical with the munjistin of Stenhouse, and has shown that it is a monocarboxyl-derivative of purpuroxanthin, bearing to it the same relation that pseudopurpurin does to purpurin. These researches also show that the madder-root contains, besides alizarin existing as such, three glucosides, viz., one which gives pseudopurpurin or purpurincarboxylic acid, a second which gives alizarincarboxylic acid, and a third which gives munjistin or xanthopurpurincarboxylic acid. The memoir presented to the Academy contains a full account of the various substances obtained from madder, and their physical properties as absorption-spectra.—*Jour. Chem. Soc.* 1883, p. 598; *Compt rend.*, 96, 465–471.

A New Mercurial for Hypodermic Use.—After several years of experimental and practical trials, Professor O. Liebreich has at length devised a preparation of mercury which is especially serviceable for hypodermic use. He announced his discovery at the recent meeting of the Berlin Medical Society. The name of the new compound is formamid of mercury, or *hydrargyrum formimidatum solutum*. Liebreich has found that about thirty injections of a one per cent. solution suffice for ordinary cases of syphilis. Given internally, the drug is inert.—*Amer. Practit.*, Feb., 1883.

GLEANINGS IN MATERIA MEDICA.

By the Editor.

Coloring of Cinchona bark with ammonia.—Thomas and Guignard noticed a cinchona bark, the liber fibres of which were of a pale yellow color, while the porous tissue was of a deep red, and which yielded infusions considerably more tinged than the infusion of good cinchona bark. The decoctions of both barks filtered when cold, yielded with Nessler's reagent precipitates, which were white from normal cinchona bark, and brown red from the suspected bark. On treating the two barks with diluted hydrochloric acid, decolorizing with animal charcoal, precipitating with platinic chloride and igniting the precipitates, that obtained from normal bark yielded ·174 gm. platinum from 1 gm. of the precipitate, while the one obtained from the suspected bark yielded ·220 gm. Pt. The chloroplatinate of cinchonine and isomers gives ·178 gm., that of quinine and isomers ·168 gm., but the chloroplatinate of ammonium ·441 gm. of platinum; the above results, therefore, prove the presence of ammonia. A yellow or pale cinchona bark may be colored red by treatment with ammonia, the tannin being converted into cinchonic red.—*Rép. de Phar.*, 1882, p. 337.

Cinchona succirubra trees in Ceylon that have been "shaved," are infested by a beetle which has been identified as the male of a species of *Lucanus*, greatly resembling the common European stag beetle. The insect appears to pierce the new bark and feed upon the resinous juice which exudes through the wound.—*Phar. Jour. and Trans.*, March 31, 1883. *Trop. Agriculturist.*

The digitalin-group.—The compounds having an action similar to that of digitalin are arranged by Schmiedeberg thus:

I. Crystalline glucosides: 1. *Digitalin*, very sparingly soluble in water; from the leaves and fruit of Digitalis purpurea. 2. *Antiarin*, very sparingly soluble in water; from upas antiar, the milkjuice of Antiaris toxicaria. 3. *Helleborein*, freely soluble in water; from the root of Helleborus niger, viridis, and foetidus. 4. *Euonymin*, sparingly soluble in water; from Euonymus atropurpureus. 5. *Thevetin*, soluble in 124 parts of water; from the seeds of Thevetia nereifolia and Cerbera Odallam.

II. Not glucosides, in part crystalline: 6. *Digitoxin*, quite insoluble in water; from the leaves of Digitalis purpurea. 7. *Strophantin*, soluble in water; in the Kombé arrow poison of West Africa, from

Strophantus hispidus. 8. *Apocynin*, almost insoluble in water; from the root of Apocynum cannabinum.

III. Glucosides not crystallizable, very sparingly soluble in water: 9. *Scillain*, from the bulb of Urginea Scilla. 10. *Adonidin*, from Adonis vernalis. 11. *Oleandrin*, from the leaves of Nerium Oleander.

IV. Amorphous glucosides, very soluble in water, resembling saponin: 12. *Digitalëin*, from the fruit and probably other parts of Digitalis purpurea. 13. *Neriin*, probably identical with digitaleïn, from the leaves of Nerium Oleander. 14. *Apocynëin*, from the root of Apocynum cannabium. 15. *Convallamarin*, very like digitaleïn from Convallaria majalis.

V. Parts of plants not previously investigated. 16. *Tanghinia venenifera*, the fruit. 17. *Neriodorin* and *neriodoreïn*, from the bark of Nerium odorum. 18. *Upas of Singapore*, contains, besides a strychnaceous principle, a principle which acts like antiarin.

VI. Substances which besides other actions, possess the action of digitalin: 19. *Erythrophlœin*, freely soluble in water; from sassy bark Erythrophlœum guineense. 20. *Phrynin*, from the glandular secretion and dried skin of the toad, Bufo viridis and B. cinereus.—*London Med. Record.*

Minjak-Lagam or *Lagam-Balsam*, according to Dr. De Vrij, was first introduced into Rotterdam in 1854, from Padang in Sumatra. It closely remembles copaiba in appearance, and yields a considerable amount of levogyre volatile oil boiling between 245° and 252°C, the boiling point rising finally to 290°. The resin is dextrogyre and on treatment with nitric acid yields an uncrystallizable very bitter substance. The plant from which it is derived is unknown; it appears that the oleoresin varies somewhat in its properties.

G. Haussner examined a lagam-balsam, which was a thick liquid, of a peculiar aromatic odor and a bitterish, lastingly acrid taste. In reflected light it was of a dingy green, in transmitted light yellowish and transparent; its solutions were likewise fluorescent. It was readily and completely soluble in alcohol, ether, benzol, chloroform, and carbon disulphide. Mixed with strong sulphuric acid, sulphurous acid was given off and the color changed to purplish red, brown, and black. On distillation with water about 33 per ct. of volatile oil was obtained, which on rectification in carbonic acid gas, boiled between 249° and 251°, was colorless, levogyre 9·9°, and possessed a not disagreeable aromatic odor and burning taste; on oxidation it became yellow. From

the ultimate analysis and the density of its vapor, its composition was determined to be $C_{20}H_{32}$. A crystalline compound of the formula $C_{20}H_{32}4HCl$ was obtained on treating the oil with dry hydrochloric acid gas.

The resin was inodorous, hard, yellow, soluble in alcohol and ether. A portion of it is soluble in potassa solution and yields a copper salt having the formula $C_7H_{12}O_3Cu$. The portion insoluble in alkali was treated with melted potassium hydrate, when butyric, acetic, and formic acids were obtained; also phenols or aromatic acids which could not be determined for want of material.

Minjak–lagam balsam evidently shows considerable analogy to both copaiba and gurjun balsam, and differs from the latter mainly by the resin-acid, which could not be crystallized.—*Archiv d. Phar.*, April, 1883, 241–255.

The active principle of Piscidia Erythrina or Jamaica dogwood, has been isolated by Edward Hart. A pound of the fluid extract was well mixed with 30 grams of quicklime previously made into a thick paste with water; after digesting for half an hour the liquid was filtered, and water was added to the filtrate until it became slighty turbid; after 2 or 3 days crystals of the principle, for which the name *piscidin* is proposed, separated accompanied with resinous substance. By adding more water a second crop of crystals still more impure can be separated. The crystals are purified by recrystallization from alcohol. The resinous matter precipitated by water retains a small portion of piscidin, of which, the author thinks a pound of the fluid extract contains about one gram.

Elementary analysis led to the formula $C_{29}H_{24}O_8$. Piscidin crystallizes in nearly colorless prisms, melts at 192°C., is insoluble in water, slightly soluble in cold, much more in boiling alcohol, slightly soluble in ether, easily soluble in benzene and chloroform. It dissolves in cold concentrated hydrochloric acid, and is reprecipitated apparently unchanged, by dilution with water. It dissolves in cold sulphuric acid, and separates again by addition of water, but it dissolves no longer easily in alcohol. Boiling with acids causes no separation of sugar. The alcoholic solution is neutral to testpaper, and not precipitated by acetate of lead.—*Amer. Chem. Jour.*, April, 1883, 39.

The coloring matter of black grapes and red wine, according to E. J. Maumené, is produced by the oxidation and probably hydration of a colorless compound. When the berries just beginning to turn red are

placed in a vacuum over sulphuric acid, the color changes to yellow, but on admitting moisture and oxygen, both are rapidly absorbed and the color changes to blue-black.—*Compt. Rend.*, xcv., 925.

Cannabine Tannate is highly recommended by Fronmüller as a mild and efficient hypnotic, which leaves no symptoms of intoxication and does not produce constipation, but like opium it must be given in increased doses when used for some time. It is described as a yellowish brown powder, insoluble in water and ether, scarcely soluble in alcohol, of a not unpleasant odor and of a bitterish astringent taste; under the microscope it is seen to form amorphous pointed plates. The process for its preparation is not given, but is said to be tedious and difficult owing to its ready decomposition; but it is stated to be permanent and not to lose its activity after being mixed with sugar.

On distilling hemp with water a volatile oil is obtained, consisting of cannabene and cannabene hydride, the latter being poisonous and of an unpleasant odor and taste; it is not a constituent of the cannabine tannate.—*Archiv d. Phar.*, Jan., 1883, p. 51, *Memorabilien.*

Mesembrianthemum crystallinum.—H. Mangon found in the dried leaves of the ice plant 43 per cent. of salts of potassium and sodium, and calculates that a hectare would be capable of yielding 863 kilos of potassium carbonate.—*Ibid.*, xcvi, 80.

Ledum palustre.—The crystalline stearopten from the volatile oil of this plant was obtained by Grassmann (1831) and farther examined by Trapp (1869) and Ivanov (1876), who obtained different results as to its composition. Hjelt and Collan have recently prepared this ledum-camphor and obtained from plants grown in comparatively dry soil only a minute quantity of it and no volatile oil, while the fresh plant from wet localities yielded ·7 per cent. of oil, including camphor. The latter recrystallized from alcohol is nearly inodorous and its ultimate analysis lead to the formula $C_{25}H_{44}O_2$, which comes near that ascertained by Trapp. The camphor melts at 101°C., and crystallizes well from benzol, also by sublimation, when it is obtained in long white needles. —*Berichte*, 1882, p. 2500.

Mustard oil in the seeds of Cruciferæ.—V. Dircks determined the following percentage quantities of mustard oil: black mustard seed-cake, 1.39; rape-seed from ·018 to ·037; rape-seed cake, ·020 to ·109; yellow mustard seed-cake, ·018; turnip seed, ·038; seeds of Sinapis arvensis .006. The quantity of oil decreases apparently with the age of the rape seed-cake, but whether this is due to a decomposi-

tion of the ferment or of the myrosin, the author is still engaged in determining.—*Jour. Chem. Soc.*, 1883, p. 245, 246. *Landw. Vers. Stat.*, xxviii, 179–200.

Ivy berries.—The fleshy part of the fruit contains, according to A. Jandous, 70 per cent. of water; a dark red coloring matter soluble in alcohol and water, turned greenish by ammonia and light red by hydrochloric acid; a greenish-yellow resinous matter, sweet at first, but afterwards sharp and bitter; also grape sugar, gum, albumin and mineral matters. The seeds contain albumin, inorganic matter and a fat oil with a characteristic herbaceous and irritating taste, precipitated by lead acetate, and slightly by lime water, and colored green by ferric chloride. The poisonous properties of the fruit are neither due to the resinous matter in the pulp, nor to the oil in the seeds.—*Ibid.*, 499. *Chem. Centr.*, 1882, p. 806.

The leaves of Fraxinus excelsior, Lin.—W. Gintl and F. Reinitzer found in the aqueous decoction of these leaves calcium malate and tannin, with smaller quantities of mannite and inosite, and still smaller quantities of quercitrin, dextrose, gum, and free malic acid. Fraxitannic acid is amorphous, yellow-brown, brittle, in powder golden yellow, deliquescent to a yellow-brown shining mass. It is insoluble in benzene, chloroform, and anhydrous ether, readily soluble in alcohol, acetic acid, ethyl acetate, and water, and precipitated from the latter solution, like other tannins, on saturation with common salt, but not by tartar emetic. Lead acetate gives a fine golden yellow precipitate easily soluble in acetic acid, becoming brown-green on exposure to the air and at the same time less soluble in acetic acid. Ferric chloride causes a brown-green color and precipitate, changing to blood-red by alkaline hydroxide, carbonate, or acid carbonate, the colors becoming dingy on exposure. Mercuric chloride causes a slight precipitate of calomel; warming it with alkaline cupric solution throws down cuprous oxide; heated with dilute acids or baryta water, no glucose is yielded. Dried in a vacuum at ordinary temperature its composition is $C_{13}H_{16}O_7$, and after heating to 100°C. in a stream of carbonic anhydride $C_{26}H_{30}O_{12}$, this anhydride being only slighty soluble in hot water.

A minute quantity of volatile oil was obtained, which had a strong and very pleasant odor like that of syringa flowers; it boiled at 175°C. and had the composition $C_{10}H_{20}O_2$.—*Jour. Chem. Soc.*, 1883, p. 216–219. *Monatsh. Chem.* iii, 745–762.

Constituents of Turmeric.—Jackson and Menke have continued their

investigations on curcumin (see *Amer. Jour. Phar.*, 1882, p. 388) and studied the products obtained by the action of nascent hydrogen and bromine. Oil of turmeric was obtained by light petroleum and purified by fractional distillation under diminished pressure; the fraction boiling below 193°C., consisted of turmerol and petroleum hydrocarbons, and the second fraction of turmerol, $C_{19}H_{28}O$; a viscous semi-solid residue was left. Turmerol is pale yellow, of a pleasant aromatic odor, spec. grav. ·9016 at 17°C., dextrogyrate, readily soluble in the ordinary solvents except water, and boils under ordinary pressure at 285–290°C., but decomposes at the same time. It is an alcohol, and by action of a hot solution of potassium permanganate in excess is oxidized to terephthalic acid.—*Amer. Chem. Jour.*, iv, 360–374.

Oil of Erechthites consists, according to F. Beilstein and E. Wiegand, almost exclusively of terpenes, boiling between 175° and 310°F.

Oil of Erigeron canadense contains mainly a terpene $C_{10}H_{16}$ which after distillation over sodium, boils at 176°C., has the spec. grav, ·8464 at 18°C., and forms a crystalline dihydrochloride $C_{10}H_{16}$ ·2HCl, which melts at 47 to 48°C.

Oil of Marjoram.—The first fractions are a terpene $C_{10}H_{16}$, boiling at 178°, of spec. grav. ·8463 at 18·5°C., and forming a liquid monohydrochloride. The fraction boiling between 200° and 220°C., has the composition $C_{15}H_{26}O$, and is not affected by long continued boiling with metallic sodium.—*Berichte*, 1882, p. 2854.

The protein compounds of milk.—The statement made by Kemmerich, concerning the formation of casein from albumin, led Schmidt-Muehlheim to undertake a series of experiments, the result of which was that on digesting fresh milk at 40°C (104°F) for from 6 to 24 hours, albumin was not changed in the least, but casein decreased in quantity, on an average 4·17 per cent. in 6 hours, 9·45 per cent. in 8 hours, and 16·5 per cent. in 24 hours. This casein was converted into peptone, the increase of which over that contained normally in milk was proven colorimetrically by cupric sulphate and comparison with peptone solution of known strength. In order to obtain the peptone in a suitable condition for this examination, it was found necessary to remove the albuminoids not by boiling, but by precipitation in the cold by means of table salt and acetic acid; and the milk sugar by precipitating the peptone with phosphotungstic acid and dissolving the precipitate in caustic soda. Fresh milk contains between ·08 and ·19 per cent. of peptone, which by digestion was increased to ·33 per cent.

The conversion into peptone ceases after boiling the milk, but is not interfered with by the addition of salicylic or carbolic acid.—*Chem. Cent. Bl.*, 1883, p. 246. *Pflüg. Archiv.*

The Effect of Chemicals on the reaction of Diastase upon Starch has been studied by Professor W. Detmer, who observed that the conversion of starch is greatly accelerated by the presence of carbonic acid. Minute quantities of citric acid (·0001 to ·005 gm. added to 25 cc. of 1 per cent. starch paste and 5 cc. malt infusion) have likewise an accelerating effect, increasing with the amount of acid, until a certain percentage is reached beyond which the process becomes more sluggish, and by still larger amounts of acid is entirely suspended. Analogous effects were likewise observed with phosphoric and hydrochloric acid; but a relatively large proportion of carbolic acid may be added, without materially affecting the formation of sugar, which is prevented, however, by an excess of the compound mentioned. An extremely faint alkaline reaction diminishes the conversion of starch, and a few drops of concentrated solution of potassa prevents it entirely; but in the presence of a large proportion of starch paste and at an elevated summer temperature, the mixture often acquires an acid reaction through the influence of numerous schizomycetes. The chemicals mentioned above, without the presence of diastase, do not produce the conversion of starch in the same time in which the ferment effects it completely.

A very convenient test for ascertaining the progress of this process is found in the behavior of iodine solution, which colors unaltered starch paste, blue; but as the conversion into sugar proceeds, the addition of iodine will successively cause a violet, dark red, yellowish red, and finally, scarcely any coloration.—*Zeitschr. Physiol. Chem.* vii. 1–6. (See, also, *Am. Jour. Phar.*, 1883, 292–296.)

New Anæsthetics.—Dr. V. Mering, at the recent meeting of German Naturalists and Physicians, reported his experiments with two new anæsthetics: *diethylacetal* and *dimethylacetal*. The former has a burning, pungent taste, the latter a disagreeable smell and taste. Both produce narcosis very rapidly in frogs and rabbits. There is slowing of the heartbeat, and finally weakening of the respiration. In inhalation they act much like chloroform. Mering gave the diethylacetal to some criminals and found that it acted very well, producing narcosis with no bad after-effects. *South. Med. Rec.* 1883, p. 29.

CONVERSION OF PHENYL ETHERS OF CARBONIC ACID INTO SALICYLIC ACID.

By W. Hentschel.

The author shows that when sodium-phenol is acted on by carbonic anhydride, sodium phenyl carbonate is first formed; and in presence of another molecule of sodium-phenol this is decomposed with formation of the sodium salt of salicylic acid. The intermediate product is best prepared by passing dry carbonic anhydride into a solution of sodium-phenol in absolute alcohol; the resulting body is a mixture of equal parts of ethyl and phenyl sodium carbonate. When heated with sodium-phenol it yields salicylic acid.

The author has prepared phenyl sodium carbonate in large quantities by passing carbonyl chloride into an aqueous solution of sodium-phenol. After purification, it was obtained as a white crystalline mass which distilled at 301—302°. The mode of preparation is of general application. The author has likewise prepared the orthonitrophenyl-compound, which crystallizes from alcohol in silky rhombic plates.

Ethyl phenyl carbonate obtained by the action of ethyl chloroformate on potassium-phenol, can also be converted into salicylic acid. Analogous methods of preparation yield a series of substituted ethyl ethers of phenyl carbonate. A parachlorophenyl, a tribrominated, an orthonitro-ether of phenyl carbonate, and finally the corresponding thymol compounds, have been obtained.

Conversion of Ethyl Phenyl Carbonate into Salicylic Acid.—On heating ethyl phenyl carbonate with sodium-phenol in equivalent proportions, the following reaction takes place:—

$$HO.C_6H_4.COOEt + C_6H_5ONa = OH.C_6H_4.COONa + C_6H_5.OEt.$$

The author considers that carbonic anhydride in this case exerts first an etherifying action on sodium-phenol, and that the phenyl sodium carbonate thus formed only yields salicylic acid on coming into contact with a second mol. of sodium-phenol. In Kolbe's process, it is possible that the conversion of the phenyl salt into salicylic acid might be produced by some other method such as warming. The author was unable to obtain salicylic acid by digesting ethyl phenyl carbonate, or diphenyl carbonate, with sodium or an alcoholic solution of sodium.

The Conversion of Diphenyl Carbonate into Salicylic Acid is best

performed by distilling the salt with dry sodium ethylate in a current of hydrogen gas. The reaction

$$CO(O.C_6H_5)_2 + EtO.Na = OH.C_6H_4.COONa + C_6H_5.OEt$$

takes place. When distilled with sodium hydroxide, the diphenyl carbonate yields sodium salicylate and phenol. The reaction proceeds so readily that the author suggests the possibility of a commercial process being made out of it.—*Jour. Chem. Soc.*, 1883, p. 588; *J. pr. Chem.* 27, 39–45.

MANUFACTURE OF SORGHO AND IMPHY-SUGAR IN THE UNITED STATES.

By F. Böckmann.

True sorgho from Chinese seed was imported into the United States in 1855; imphy, the variety from African seed, in 1857. The cultivation of sorgho for sugar making has not hitherto taken root in Europe, but in the States of Ohio, Iowa, Illinois, Missouri, etc., considerable progress has been made, the production of sorgho sugar in America reaching 640,000 lbs. in 1875. For the same year the total production of sugar-cane sugar is estimated at 63,000,000 lbs., and of beet-sugar 20,000,000 lbs. There are certain difficulties attending the growth of sorgho, but it presents the advantage of flourishing in a climate too cold for the sugar-cane and too warm for the sugar-beet. The quantity of cane-sugar contained in the plant is at its maximum when the seed begins to ripen; the color of the plant then changes from apple-green touched with red to citron-yellow. When this point is reached, the plants are deprived of their leaves, the stems cut off a few inches above the ground, and immediately crushed between large vertical or horizontal rollers. If this operation is delayed, a portion of the cane-sugar reverts to glucose; *e.g.*, a sample of sorgho containing 15·47 per cent. cane-sugar and 1·71 per cent. glucose the day it was cut, contained 45 days later 6·32 per cent. cane-sugar and 15·73 per cent. glucose. The proportions of the two varieties of sugar contained in the plant at different stages of growth were, in the crops of 1863, 1865, and 1866, as follows:—

	Cane-sugar.	Glucose.
1. When the ear was half out of the sheath	0·23— 4·91	3·32—6·37
2. Just before the fall of the stamens	2·89— 6·54	3·26—5·26
3. When the ears commenced to turn color	7·84—11·78	2·16—6·04
4. Completely ripe	9·24—13·57	1·19—4·05

An analysis of sorgho juice gave—water, 80 per cent.; cane-sugar, 15–17 per cent.; glucose, 1 per cent.; starch, gum, pectic acid, albumin, red coloring matter, ash, etc., undetermined. The most primitive method of defecating the juice consists in heating it to 70–80° and adding lime; at this temperature, the starch swells and diffuses throughout the liquid, and subsequently prevents the evaporation being carried to the point necessary for the crystallization of the cane-sugar. A better method is to carefully filter the juice through a series of filters to remove impurities which promote fermentation, hinder evaporation, and impart a color to the product. After filtration the juice is mixed with lime, and allowed to stand at the ordinary temperature for a certain time; the clear liquid is then evaporated. A still more complex method proposed is to mix the juice from the mill with lime, magnesia, and its own volume of alcohol of 84 per cent.; to decant the clear liquor after settling, and to press the residue into cakes for feeding, or for the production of alcohol; to distil the alcohol off from the purified solution, and continue the evaporation of the latter to the crystallizing point. F. L. Stewart's process of defecation proceeds by heating the juice to 82° with lime in copper vessels, *filtering*, and evaporating with the addition of an acid liquid, the composition of which is not published. The evaporation of the defecated liquid is conducted in a very primitive fashion in the States. Four kettles of diminishing size are used, each being divided into several compartments to moderate the ebullition; the syrup is transferred from one kettle to another by a long-handled bowl, skimmed from time to time, and when sufficiently concentrated filtered through canvas.

The refining is conducted in a simple cylindrical vessel, packed with animal charcoal and sand or gravel. The only analysis of sorgho sugar known to the author gave—water, 1·72; cane-sugar, 93·05; glucose, 0·41; ash, 0·68; organic matter, 4·14.—*Jour. Chem. Soc.*, 1883, p. 633; *Ann. Agron.*, 1882, 146; *D. Industrie Ztg.*

VARIETIES.

NAPHTHALIN AS AN ANTISEPTIC.—Owing to the occasional startling constitutional effects produced by the topical application of iodoform, attempts have been made in various directions to discover some antiseptic which would be as useful as that drug, but free from its disadvantages. Fischer (Strasburg) claims that he has found such an antiseptic in naphthalin.

Naphthalin is available for all the purposes to which iodoform has been applied, and as yet no constitutional effects have been observed to follow its use locally.

It is as powerful an antiseptic and "antibacteric" as iodoform, and has a less disagreeable smell. Its application causes a slight transitory sensation of heat, but no pain. Anschütz states that very sensitive granulations sometimes bleed very freely after it has been applied, owing to the sharp angles of the hard crystal. This can be obviated by using it in fine powder, though if there is much discharge it is then apt to form a crust on the surface of the granulations. When the crystalline form is used the discharges escape freely.—*Centralbl. f. Chir.; Dental Cosmos*, April, 1883.

A CASE OF BORIC ACID POISONING has been reported by Prof. Bruzelius ("Hyyiea," 1882, p. 557). A patient suffering from diarrhœa was given ten enemata of 1400 gr. of 4 per cent. solution of the acid; after four days he had four more. On the ninth day he suffered from congestion and irritation of the nasal and pharyngeal mucous membrane. On the eleventh day the rectal temperature rose to 39°; on the twelfth day it was 39·8°, and there were cephalalgia, somnolence and prostration. On the fifteenth day a well marked erythema appeared, which in three days gave place to an urticaria. Even nine days after the last enema the urine contained boric acid.—*Weekly Med. Rev.*, March 10, 1883.

ETHIDENE DICHLORIDE—A death recently occurred at the Liverpool Eye and Ear Infirmary during the administration of dichloride of ethidene. The heart had been pronounced healthy. The anæsthetic had been given on a flannel inhaler, and the patient came quickly under its influence. Suddenly the pulse became feeble and then stopped. In spite of all and well directed efforts the patient never revived. There is a record of about two hundred administrations of the drug; its pleasant smell being in its favor, as well as the fact that but little nausea or disposition to struggle are caused by it.—*Weekly Med. Rev.*, 1883, *March* 24.

PARALDEHYDE: A NEW HYPNOTIC.—The actions of this drug were first studied by Dr. Cervello, of Palermo; and his experiments were made in the laboratory of Experimental Pharmacology at Strasburg, under the direction of Schmiedeberg. Professor Morselli, of the Royal Asylum of Turin, has, in conjunction with Dr. Bergesis, the assistant medical officer, made an extensive series of observations with it. Its chemical composition is $C_6 H_{12} O_3$; and it is a polymeric form of aldehyde. In physiological

action it strongly resembles chloral. A dose of three grams procures quiet and refreshing sleep for from four to seven hours. It differs from chloral in its action on the circulatory system, strengthening the heart's action, while diminishing its frequency. It has also a well-marked action on the kidneys, greatly increasing the flow of urine. The skin is not at all affected. The drug does not give rise to digestive disturbances, to headache, or to any other unpleasant symptom. Up to the present, Professor Morselli has used paraldehyde about 350 times. He has found it a valuable remedy in mania, melancholia, and other nervous affections, as well as in the sleeplessness that accompanies acute bronchial catarrh, lobar pneumonia, and heart diseases. He believes that it will, to a large extent, take the place of chloral.—*British Medical Journal, February* 3, 1883. *Quart. Therap. Rev.*

THE CYANIDES IN ACUTE RHEUMATISM.—Dr. A. Luton gives the cyanide of zinc in pill, in doses of from three-fourths to one and a half grains in a single day. The cyanide of potassium, pure and well prepared, is perhaps to be preferred, he thinks, to the salt of zinc, on account of its evident activity. In mixture he gives it in the dose of one and a half grains per day. It is best administered in the form of pills, coated with silver. It is not advisable to go beyond two grains a day.—*Amer. Med. Digest*, February 15; *Independent Practitioner.*

THE ACTION OF THYMOL ON THE CIRCULATION.—The *London Med. Record*, January 15, 1883, says that Dr. Fiori used thymol in fever and apyrexia, with heart sound or diseased, taking observations of the temperature, pulse, respiration, blood-pressure, in doses from ½ gramme to 5 grammes. The observations were taken every quarter of an hour. Sixteen individuals were experimented on. He concludes that thymol produces rapid and considerable fall of temperature and diminution of the frequency of the pulse in fever. In healthy persons also it retards the pulse. In the sphygmographic tracings is seen in most cases a tendency to rounding of the curves, and at the bifurcation of the apex of the curve a greater accentuation of the oscillations of elasticity. With the fall of temperature, the blood-pressure diminishes. Thymol, while it lowers the temperature, has no bad effect on the heart; and can therefore be considered a true antipyretic remedy.—*Med. and Surg. Rep.*, February 17, 1883.

MINUTES OF THE COLLEGE.

PHILADELPHIA, June 25, 1883.

A stated meeting of the Philadelphia College of Pharmacy was held this day at the College Hall. Charles Bullock, Vice-President, in the chair. 15 members in attendance.

The minutes of the last stated meeting were read, and, on motion, adopted.

The minutes of the Board of Trustees, for April, May, and June, were read by William C. Bakes, Secretary of the Board, and, on motion, approved.

These minutes inform us that the Board have authorized a new Diploma, which will be handsomely engraved, and so displayed as to present a more elegant and finished appearance than the old one.

Professor Maisch, on behalf of the Committee on Honorary Membership, reported progress.

Charles Bullock, on behalf of the Committee on Deceased Members, read a memorial of our late lamented fellow-member Daniel B. Smith, which was attentively listened to throughout, he having been one of the first members of the College.

The memorial, which was, on motion, accepted and referred to the Publishing Committee, will be found on page 337 of this number of the JOURNAL.

On motion, the thanks of the College were tendered to Mr. Bullock for this satisfactory memento of our late distinguished member.

The following members were elected Delegates to the annual meeting of the American Pharmaceutical Association, which will be held in Washington, D. C., on Tuesday, September 11, 1883. with power to fill all vacancies which may occur, viz.: Messrs. Alonzo Robbins, Robert England, Gustavus Pile, James T. Shinn, and Charles W. Hancock.

And to attend the Convention of American Pharmaceutical Schools, which will meet at the same time and place, the following were elected Delegates, viz.: Professor Joseph P. Remington, Charles Bullock, and William J. Jenks.

No other business claiming the attention of the meeting, on motion, adjourned. WILLIAM J. JENKS, *Secretary.*

PHARMACEUTICAL COLLEGES AND ASSOCIATIONS.

THE NEW YORK STATE PHARMACEUTICAL ASSOCIATION held its fifth annual meeting at Library Hall, Ithaca, June 12th and 13th, Dr. A. B. Huested, of Albany, in the chair. The President's address and the reports of officers and delegates occupied the first session. The report on legislation was a full one, but gave the information that the pharmacy bills for the State and for Erie county failed to pass, and that for King's county was not signed by the Governor.

The officers elected are F. K Sweet, Lockport, President; C. L. Otis, Binghamton, T. J. Macmahan, New York, and J. B. Todd, Ithaca, Vice Presidents; Clay W. Holmes, Elmira, Secretary; and C. H. Butler, Oswego, Treasurer.

The suggestions of the retiring President were considered and mostly approved. Various reports and papers were read, among which was a very elaborate one by Mr. H. B. Parsons, *on the morphine strength of tincture of opium.* Of the 47 samples examined 21 were found to yield 3·5 grains of morphine, or over, for one fluidounce, and are regarded as being of full strength. 17 samples appeared to have been made from one avoirdupois ounce of moist opium per pint, and contained between 2·3 and 3·3 grains of morphine; 7 samples contained between 1·3 and 2·2 grains of morphine, and were probably made of 5 or 6 ounces avoirdupois of opium to the gallon; and 2 samples fell even below this strength.

After the appointment of various committees the association adjourned,

to meet again in New York city on the second Tuesday (10th) of June, 1884. Prof. Bedford was elected Local Secretary.

NEW JERSEY PHARMACEUTICAL ASSOCIATION.—The thirteenth annual meeting was held in Orange, on Wednesday and Thursday, May 16th and 17th, at Music Hall.

Dr. T. K. Chambers welcomed the association to Orange, and was followed by Dr. Stephen Wicks, the oldest physician in Orange. The President, Joseph P. Candy, delivered his annual address, in which were some good recommendations. The financial condition of the society is good and the membership is increasing. Credentials were received from several State pharmaceutical associations, and the delegates were invited to take part in the meeting. Twenty-two new members were elected, and the next place of meeting will be at Asbury Park.

The following officers were elected for the ensuing year: President, R. W. Vandervoort, Newark. Vice Presidents, C. G. Am Ende, Hoboken, and H. P. Thorn, Medford. Treasurer, William Rust, New Brunswick. Recording Secretary, A. P. Brown, Camden. Corresponding Secretary, R. J. Shaw, Plainfield. Standing Committee—C. G. Am Ende, J. C. De Cou, A. G. Smith, D. W. Brant, Martin Goldsmith.

Attention was called to the death of Mr. James Stratton, of Bordentown, one of the former Presidents, and the Publication Committee were directed to have a phototype of deceased placed in the Proceedings for 1883.

On Wednesday afternoon the members and their ladies visited Llewellyn Park and other points of interest around Orange, and at 6 o'clock sat down to a banquet, which was elaborately served.

On Thursday morning fifteen names were selected for presentation to the Governor, from whom to select five to constitute the State Board of Pharmacy. Papers and answers to queries were read by the following members: Charles Holzhauer, F. B. Kilmer, D. Wood Brant, H. P. Reynolds, A. P. Brown. After the appointment of different committees by the President the association adjourned.

PENNSYLVANIA PHARMACEUTICAL ASSOCIATION.—The annual meeting was held June 19th and 20th, in Harrisburg, President Alonzo Robbins in the chair. After an address of welcome by the Mayor a committee on credentials was appointed, and the President read his annual address, which, together with the report of the Executive Committee, was referred to a special committee to report on the suggestions made. Reports were also read from the remaining officers and from the various committees. The Treasurer had a cash balance of $550.48 on hand. The Committee on Legislation reported in detail on the progress made by the proposed pharmacy act in the House of Representatives, and on the manner in which it was finally defeated. Several Representatives who had interested themselves in the passage of the act were present at one of the sessions, and addressed the association, and several who had opposed its enactment were on the floor listening to the discussions, and appeared to be favorably impressed

with the importance of regulating by law the practice of pharmacy. The committee was charged with preparing a refutation of the malicious misrepresentations made in a circular which had been distributed in the Legislature, and with collecting from all sources and reporting on statements and arguments which may be advanced against any part of the bill.

Senator Hess and Representative Vogdes, who had specially interested themselves in the repeal of the State tax on the sale of proprietary medicines, received the courtesies of the floor.

Mr. Jesse B. Duble, Williamsport, was elected President, and Charles H. Cressler, Chambersburg, and Chas. T. George, Harrisburg, Vice Presidents for the current year; the Secretary, Treasurer and Executive Committee were re-elected.

A lengthy and exhaustive report was read by Dr. L. Wolff on the new remedies introduced or revived during the past ten years. Papers on ethical subjects were presented by Messrs. W. L. Turner and W. B. Thompson on pharmacy in its relation to medicine, on the vending of nostrums, and on pharmaceutical cleanliness, and Mr. J. H. Redsecker favored the association with a humorous poem. Papers on practical subjects were read by G. W. Kennedy, on the best menstruum for tincture and fluid extract of calumba; by Gustavus Pile, on the temperature of ice cream, showing that it is considerably lower than the temperature of ice water; by L. E. Sayre on the reaction between potassium iodide and spirit of nitrous ether; by J. A. Weaver on the preparation of syrup of ipecacuanha; by J. F. Patton on extract of vanilla; and by another member on an improved formula for fluid extract of wild cherry. All the papers read were freely discussed.

Special committees were appointed, one charged with the labor of endeavoring to increase the membership, and another to have charge of all entertainments at the annual meetings, the expenses for such to be defrayed by those participating.

The next meeting will be held at Wilkesbarre, on the first Tuesday of June, 1884, Benj. Armstrong being the Assistant Secretary.

After adjournment most of the members present traveled through the Cumberland and Shenandoah valleys to Luray, and paid a visit to the celebrated cave, admiring the multitude of stalactides and stalagmites of all conceivable forms.

THE MARYLAND STATE PHARMACEUTICAL ASSOCIATION was organized in Baltimore, May 8th, Dr. E. Eareckson acting as temporary chairman, and C. Caspari as temporary Secretary. After the adoption of a constitution and by-laws the following officers were elected for the current year: J. J. Thomsen, Baltimore, President; C. W. Crawford, Gaithersburg, T. W. Shryer, Cumberland, and H. Duffy, Hillsborough, Vice Presidents; J. W. Geiger, Baltimore, Secretary, and E. W. Russell, Baltimore, Treasurer. A number of committees and delegations were appointed, and the association adjourned, to meet again in Baltimore, at the hall of the Maryland College of Pharmacy, on the second Monday of May, 1884.

WEST VIRGINIA STATE PHARMACEUTICAL ASSOCIATION.—The third annual meeting was held in the Opera House, Charleston, June 12th, Pre-

sident E. L. Boggs in the chair. The usual addresses and reports of officers and committees were received, and action was taken on several measures of importance to pharmacists. The officers elected are R. A. McCabe, Wheeling, President; C. M. Shrewsbury, Wheeling, and J. F. Crider, Huntington, Vice Presidents; C. Menkemeller, Wheeling, Secretary; A. N. Williams, Parkersburg, Treasurer, and E. F. Reifsnyder, Parkersburg, Assistant Secretary. The next annual meeting will be held in Charleston, on the second Tuesday of June, 1884.

THE OHIO STATE PHARMACEUTICAL ASSOCIATION held its annual meeting at Case Hall, Cleveland, May 16th and 17th. President Peters delivered his annual address and the various officers and committees presented their reports. Delegates from the Pennsylvania and West Virginia Pharmaceutical Associations were present.

The following officers were elected for the ensuing year: S. S. West, Cleveland, President; John Heyer and E. M. Hatton, Vice Presidents; the Secretary and Treasurer were re-elected. Considerable discussion was had on the proposed pharmacy law and a committee was appointed to endeavor to secure its passage next fall. A number of papers mostly of a practical character were read, and the association finally adjourned to meet again in Cincinnati on the third Wednesday of May, 1884. Mr. Wm. J. Martin was chosen Local Secretary. Professors P. W. Bedford, of New York, and J. P. Remington, of Philadelphia, were elected honorary members.

THE KENTUCKY PHARMACEUTICAL ASSOCIATION convened at its sixth annual meeting in Lexington May 22d and 23d, Vice-President Holzhauer occupying the chair. The President's address, reports of officers and committees and discussions thereon occupied most of the time. The proposed pharmacy law was entrusted to a committee with the object of securing its passage. The officers for the current year are: President, T. B. Wood, Lexington; Vice Presidents, E. C. Pfingst, Louisville, W. B. McRoberts, Stanford, and J. J. Brooks, Richmond; Secretary, A. J. Elwang, Louisville; Corresponding Secretary, J. T. Cook, Harrodsburg; Treasurer, P. Nodler, Covington. The next meeting will be held in Louisville in May, 1884.

KANSAS PHARMACEUTICAL ASSOCIATION.—At the fourth annual meeting held in Topeka, June 6th, the customary reports of officers and committees were received, and action taken in opposition to copyrighting pharmaceutical names, and in favor of removing the tax on alcohol used for pharmaceutical preparations. A paper by H. W. Spangler showing the convenience of parts by weights adopted by the new Pharmacopœia, elicited considerable discussion. The officers for the current year are M. L. Stone, Wamego, President; H. W. Spangler, Perry, and T. Egersdorff, Leavenworth, Vice Presidents; R. H. T. Nesbitt, Leavenworth, Secretary; D. Holmes, Topeka, Assistant Secretary, and W. A. Stanford, Treasurer. The next meeting will be held in Leavenworth, on the second Wednesday of June, 1884.

THE MISSISSIPPI STATE PHARMACEUTICAL ASSOCIATION was revived at Jackson, June 12th. The officers are J. W. Eckford, Aberdeen, President; J. R. Finlay, Vice President; H. F. West, Fayette, Secretary, and F. A. Dicks, Natchez, Treasurer. Sixty members were enrolled.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Hubbard's Newspaper and Bank Directory of the World, with Gazetteer and Atlas combined. Edited by H. P. Hubbard, New Haven, Conn. 1882. Two volumes, 8vo, pp. 2591. Price $10.

We have had this directory upon our desk for several months and have frequently examined and consulted it, and the more we have seen of it, the more we became impressed with the enormous labor and the great care bestowed upon the collection, and arrangement of the material, and with the lucid and comprehensive manner in which the whole is presented for use. The two volumes contain the names and descriptions of over 30,000 newspapers and periodicals, and 15,000 banks throughout the world, embracing substantially all newspapers, magazines and quarterlies published upon every continent, in every empire, kingdom, nation, province and island, together with the names and locations of the leading responsible banks and banking institutions of every country. The work is fully supplied with maps and with gazetteer information of all countries, and while the descriptions of the several States of the United States of America are especially full, those given of the other countries—large and small—are full of interest. The introduction to the lists of periodicals of the different countries are mostly given in the English, French and German languages, frequently also in the vernacular of the country, and in all cases not only the title of the periodical in the language in which it is printed, but likewise its English translation is given.

It is impossible to adequately describe this work, but we may say that the editor's claims are fully sustained, when he states it to be at once "unique, comprehensive, reliable, useful and entertaining."

Materia Medica for Physicians and Students. By John B. Biddle, M.D., etc. Ninth edition. Revised, rewritten and enlarged in accordance with the sixth revision of the United States Pharmacopœia, by Clement Biddle, M.D., U.S.N. With numerous illustrations. Philadelphia: P. Blakiston, Son & Co., 1883. 8vo, pp. 537. Price, cloth $4.00, sheep $4.75.

This work has long been a standard text book for medical students. During the lifetime of the late Professor Biddle it has passed through eight editions, which have been noticed in former volumes of this Journal. The present edition has been prepared by Dr. Cl. Biddle and Henry Morris. Compared with former editions the changes are numerous, and we think, are all for the better. The most important changes in the general plan of the work are a re-arrangement of the classification of medicines, and the consideration of the actions of medicines from their physiological effects. A number of unimportant remedies have been omitted, others lately introduced have been added. In adapting the work to the new United

States Pharmacopœia, several changes have not been noticed; thus linim. camphoræ (p. 99), linim. chloroformi (p. 106), and linim. plumbi subacet. (p. 189) are stated to be made with olive oil, while the new pharmacopœia directs cotton seed oil; spir. chloroformi (p. 99) is said to be a solution of chloroform in diluted alcohol instead of alcohol, etc.

An interesting addition are notes on the Chinese materia medica, in comparison with that of the United States.

Much of the work has been rewritten, and it has been brought up to the wants of the present time. Its external appearance is satisfactory; the illustrations are the familiar ones from former editions. It will doubtless prove as useful and instructive as those which preceded it.

Report on the Pharmacopœias of all Nations. By Dr. James M. Flint, U. S. N. Washington, 1883. 8vo, pp. 28.

A very creditable report, the result of much inquiry and study, made to the Surgeon-General U. S. N., giving the title, dates, internal arrangement, mode of revising, etc., of all Pharmacopœias now in use. A tabular resumé, at the end of the report, gives, in alphabetical order, the different countries, with the Pharmacopœias or standard pharmaceutical work in general use.

The Calendar of the Pharmaceutical Society of Ireland, 1883. Dublin. Pp. 86.

Remarques sur les variations de la composition du sperme dans quelques cas pathologiques. Par M. le Dr. C. Méhu.

Remarks on the variations in the composition of sperma in several pathological cases.

Reprint from "Annales des maladies des organs genito-urinaires."

Notes linguistiques à propos du recueil des travaux du bureau ethnologique publié par la Smithsonian Institution à Washington. Par M. Adr. Nicklès.

Linguistic notes suggested by the contributions of the Ethnological Bureau published by the Smithsonian Institution, Washington.

Cancer of the Intestinal Tract, operations for the removal of malignant strictures of pylorus and intestines, etc. By Reuben A. Vance, M.D., Professor in the University of Wooster, Cleveland, O. 8vo, pp. 15.

Reprint from "Columbus Medical Journal."

The first annual report of the Southwestern Hospital of the City of Philadelphia, 1881–2. 8vo, pp. 19.

Proceedings of the fourth annual meeting of the Missouri State Pharmaceutical Association at Kansas City, Oct. 25, 1882. 8vo, pp. 15.

The officers are W. W. Alexander, St. Louis, President; A. R. Edmunds, Miami, H. M. Pettit, Carrolton, and W. M. Cason, Montgomery, Vice Presidents; Wm. T. Ford, Kansas City, Secretary; J. T. Plunkett, Brunswick, Treasurer; O. A. Wall, St. Louis, Local Secretary. The fifth annual meeting will be held in St. Louis on the fourth Tuesday of October next.